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The Political Economy of Classical Athens

A Naval Perspective

By

Barry O'Halloran

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Συνοδοιπόροις τε καὶ συμπλοῖς

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Preface

At the end of 1979, I spent a month in Greece making a film documentary for Irish state television to mark Greece becoming the 10th member of the European Union on January 1st, 1980. Recently, the President of the European Commission, Jean-Claude Juncker said the reason Greece joined then was because 'we didn't want to see Plato play in the second division'.[1] For those fashioning the new European project, it was unconscionable that Greece should remain outside for political and ideological reasons. As was apparent at the time, this was regardless of Plato's level of fitness, or even if the European Premier Division could afford the ultimate transfer fee: the final reckoning of which has still to be calculated.

In the intervening decades I have travelled many times to Greece and consumed its history, both ancient and modern. As a frequent visitor to the sites (the Parthenon, Delphi, Epidaurus, Olympia, and others) it became increasingly obvious to me that there was a dissonance between what I was looking at and what I was reading. How could all of this extraordinary display—the Glory that was Greece—have been created by a society which, according to the prevailing academic orthodoxy, had only a primitive economy. My journalistic impulses and training in the dismal science gradually conspired that I should investigate this dichotomy further. Ultimately, this led to my completing a PhD in Classics, the thesis of which is the basis of this book.

This publication offers me an opportunity to express my heartfelt gratitude to a number of people whose generous assistance and advice has made this endeavour possible. My thesis supervisor, Prof. Brian McGing, provided both invaluable counsel and unstinting support throughout my years as a doctoral student. From many other members of the staff at Trinity Classics department I received much help and encouragement during the writing of both the dissertation and this book. I would like to thank Dr. Martine Cuypers for her patient efforts in tutoring me in ancient Greek and in superintending my efforts in that regard for this book. Dr. Shane Wallace was a willing and congenial source of advice in Classics research for the uninitiated, and helped navigate me through my encounters with Greek inscriptions. My external thesis examiner, Prof. Hans van Wees of University College London, was instrumental in having this book published, the final version of which has profited enormously

1 Guardian 3.7.2015.

from his advice and suggestions. Additionally, I would like to express my appreciation for the valuable suggestions and comments made by Brill's anonymous reviewer.

As with all ostensibly individual enterprises, a wider community of support is vital. I owe a debt of gratitude to many people, but especially to the following; Peter Barry for reading the material, Dr. Mary Codd for statistical support and to Dana Stroiescu for her electronic publishing skills. The artist Mieke Vanmechelen, from whom I commissioned a suite of drawings, has recreated aspects of classical Athens for which little or no material evidence exists. These drawings have added a valuable visual dimension for which I am deeply appreciative. I would also like to acknowledge the support she received for this work from the Thomas Dammann Trust. As usual, however, none of the above is responsible for this work's remaining faults or flaws, the responsibility for which rests solely with me.

Barry O'Halloran
Dublin, July 2018

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Introduction

This book is an exploration of the classical Athenian political economy through the prism of its navy. Its analysis of the evolving political economy of Athens is set within the broader context of the major political, institutional and military events with which it is inextricably linked.[1] In doing so, it recognises that there has been a persistent tradition within ancient scholarship that has viewed the ancient Greek economy as primitive and therefore not amenable to the tools of analysis of modern economics. It was a conception that reached its apogee during the second half of the last century when, under the aegis of Moses Finley, the primary motivating factor for ancient economic agents was deemed to be status and not economic self-interest. According to this perspective, the ancient economy did not exist as a separate category but was embedded within an aristocratic milieu of status-seeking and reciprocal gift-giving in which market exchange had, at best, a peripheral role.

In the case of Athens it gave rise to the perception of a paradox at the heart of this emblematic city-state which was first identified by Marx: how could such a vast flowering of cultural, political and intellectual achievement arise in a society whose economy rested on such 'primitive' institutional foundations as slavery?[2] According to this view, classical Athens, a society whose normative appeal in terms of culture, philosophy and politics still resonates today, had an embedded primitive economy. There followed a lengthy and acrimonious scholarly debate—the oikos debate—in which the applicability of economic analysis to the ancient economy became a central point of contention. The resultant scholarly schism has largely deadlocked serious treatment of the ancient economy for well over a century. The debate, rancorously begun in the 19th century between so-called 'modernists' and 'primitivists', continued in that vein for much of the 20th century, though within a modified framework, described by one of its participants as 'an academic battleground'.[3] The latest phase of the debate between 'substantivists' and 'formalists' (different rubrics,

1 The term 'political economy' instead of 'economy' is largely used throughout when referring to ancient economies such as Athens, but for stylistic variation I sometimes use the shorter 'economy': the two terms should therefore be considered interchangeable.

2 Marx 1973, 105,111. It was Marx, a Classics scholar, writing in *Grundrisse* (not published until 1938 and in English only in 1973) who first identified the contradiction, but because it presented a fatal problem for his concept of historical materialism and the 'base' 'superstructure' paradigm, he simply ignored it.

3 Hopkins K. 1983, ix.

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broadly similar issues) was given a new lease of life with the publication of Finley's *The Ancient Economy* over 40 years ago, and established Finley's position as 'the new orthodoxy'—which still holds considerable sway.[4]

The accomplishments of the classical Athenians in many spheres have been widely acclaimed and rightly celebrated. Yet incongruously, there continues to be a persistent tendency to disparage the economic foundations upon which 'the glory that was Greece' were built. Even a recent publication with the promising title *The Greeks and the New: Novelty in Ancient Greek Imagination and Experience*, having extolled Greek inventiveness and imagination at considerable length, concludes that 'the widespread and largely unquestioned use of slaves … removed much of the incentive to practical inventiveness in commercial and technological arenas … the weight of elite cultural expectation … meant that the pursuit of such objectives was considered trivial and unworthy'[5]—it would seem that rumours of the demise of primitivism have been exaggerated.

The drivers of human behaviour are to be found in both neurological universals and cultural specifics. The current academic fashion, especially in the social sciences, to proffer uniquely cultural explanations for human action is fundamentally flawed. It is also the case, however, that human beings are not slaves whose every thought and action are mere expressions of their neurological bidding. As the oikos debate amply illustrates, the proffering of disparate cultural, anthropological, and sociological arguments as explanations for essentially economic behaviour has generated far more heat than light, obscuring rather than illuminating important aspects of ancient economic history. Though my approach has a decidedly materialist emphasis, it does not contend that cultural and political factors are unimportant, but rather that economic realities are more likely to be accounted for by economic givens because culture and economics are ultimately reflective of different aspects of human

4 Finley 1973; Hopkins 1983, xi. For stylistic reasons, I use the terms primitivist and modernist throughout to describe the protagonists of both the early and later phases of the oikos debate as the precise details of their positions are not critical to my more general argument. I only use substantivist and formalist if the context sufficiently warrants differentiation. However, it should be stressed that there are important distinctions in detail between the two phases of the debate, as Paul Cartledge correctly insists: 'It is crucially important that this much more interesting and important substantivist-formalist debate should not be confused, as it often is, with the primitivist-modernizer debate.' Cartledge P. 2002, 15. A point similarly made by Ian Morris: 'Reducing substantivism to primitivism misses its political program, and with it everything that made Polanyi's and Finley's work—and ancient Greece—interesting to a wide audience.' Morris I. 1994, 354.

5 D'Angour 2011, 181.

nature. For ancient economic history to extricate itself from the methodological cul-de-sac in which it finds itself, a new approach and new perspectives are needed; particularly if we are to exit the Sisyphean cycle in which the oikos boulder ends up at the bottom of the hill with monotonous regularity. But before we move beyond the over-ploughed terrain of the polarised oikos debate, we need to have a clear understanding of its genesis and the reasons for its sustained divisiveness and intractability. Otherwise, ancient scholarship risks repeating the mistakes of the past and ancient economic history will remain a largely Cinderella discipline.

In establishing a scholarly consensus which sees status-seeking and reciprocity as the principal determinants of economic behaviour in ancient societies Finley's *oeuvre* has been more than just an influence: it has had a pervasively conditioning effect.[6] In countering it I do not argue for an extensive, elaborate or integrated Athenian economic policy which, in any case, is largely confounded by the lack of available evidence. Nor do I seek to offer recondite economic explanations for otherwise straightforward historical processes. Instead I expressly seek to counter the tendency to treat economic issues in ancient history as the unintended consequences of political decisions. One of the legacies of the oikos debate is a disquieting tendency amongst ancient historians to downplay the significance of economic factors in historical outcomes. The actual role of money and the interpretation of Athenian legislation on silver coinage is a case in point. This is particularly instructive as ancient Greece was the first society to be fully monetised, including the extensive use of fractional coinage. However, much of current scholarship proposes various aetiologies for the emergence and rapid spread of coinage throughout the Greek world in which there is a sustained emphasis on political, cultural and ideological explanations while economic, commercial and market exchange reasons are, at best, given secondary consideration.

Money is essentially a complex social institution, an expression of an implicit agreement between society as a whole and each of its members in which the state acts as a facilitating agent. Widespread acceptance of a coinage is founded on communal trust and the notion that this trust can be imposed by fiat is inimical to its very functioning and so is a most unlikely candidate to be an effective instrument of imperial consolidation. Yet modern scholarship views, for instance, the Coinage Decree as an essentially hegemonic construct designed to copper-fasten the Athenian *arche* among the allies.[7] This unremit-

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6 Kallet 2013, 43. 'The influence of the "Finley school", which denies the existence of an economic sphere in the context of the polis, has been difficult to shake, even now.'

7 Austin et al. 1980, 326. Typify such sentiments in claiming that 'the political aspects of the

ting insistence on viewing the Coinage Decree exclusively through the lens of an Athenian imperialist agenda even claims that any ensuing positive economic benefits, such as increased trade, rebounded solely to the benefit of Athens.[8] Other interpretive perspectives on the reasons for the promulgation of the Coinage Decree include administrative efficiency and increased Athenian revenues through re-minting fees.[9] Despite its quintessentially economic nature, the Coinage Decree has mainly been interpreted as a political manifestation of innate Athenian imperialism rather than a practical mechanism to facilitate and foster trade through the reduction of transaction costs.[10] In reality, the decree gave formal legal expression to an underlying economic reality in which Athenian Owls had become the currency of choice for market exchange transactions across much of the Aegean—*de facto* was merely becoming *de jure*. Kindly interpreted, all this amounts to scholarly ambivalence in evaluating economic related evidence. Less kindly, it exhibits an enduring scholarly tendency to deprecate economic factors in ancient history.[11]

There is, of course, no 'correct' way to explain historical events. But a central objective of this work is to offer economic explanations for economic outcomes; it therefore eschews the predilection in ancient scholarship to deny, minimise or ignore important aspects of ancient economic history or treat them as largely a consequence of political decisions.[12] Rather, I take it to be a fundamental priority of economic history to gain a better understanding of

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decree are obvious: to forbid the striking of coins is to diminish the sovereignty of the "allied" cities. The alleged "economic" motives are far less obvious … It is better therefore to see the decree as one further instrument among others of Athens' crushing political domination.' Yet, as the authors readily admit that this presumed instrument of crushing political domination 'was in fact never fully enforced by Athens, for what reasons we can only guess.' Mattingly 1987, 66. Describes the decree as 'a political and imperial manifesto'. Rhodes 1985, 41, is an exception in emphasising the economic benefits of the decree: 'the use of the same coinage and standards in many states is likely to have encouraged trade among them, to the benefit of all.'

8 Bury, Meiggs 1975, 226.

9 Finley 1973, 168–169; Martin 1985, 196–207.

10 JACT 1988, 241, which comments that 'The decree … has no very obvious economic significance for Athens. So the true significance of the decree is political'.

11 That this tendency to supplant economic reasons with political/imperialist ones stems from an anachronistic modern retrojection is given credence by the fact that our ancient literary sources contain no references or discussion of the Coinage Decree. Figueira 1998, 1–15, 319–465 offers a self-proclaimed 'revisionist' interpretation of the Coinage Decree which is argued persuasively.

12 Austin, Vidal-Naquet 1977, 326. An attitude typified by Austin and Vidal-Naquet who describe the Athenian Coinage and Weights Decree—an economic ordinance par excellence, as 'crushing political domination.'

the long-run processes that underlie economic change. In this regard, the material conditions that underpinned Greek cultural and intellectual achievements have, by and large, not been given the type of sustained analytical focus by classical historians which would meet the criteria for such studies as set out by Douglass North: 'I take it as the task of economic history to explain the structure and performance of economies through time.'[13] However, in challenging the recently regnant scholarly consensus on the inapplicability of economic analysis to the ancient economy I do not suggest that the fault lies solely with ancient scholarship; the discipline of modern economics itself must bear a very considerable measure of culpability. During the last century, the classical basis of the practical, empirical and problem-focussed art of political economy was transformed into the abstract theoretical science of economics, with a principal focus on short-run static equilibria. In its quest for scientific legitimacy, neoclassical economics became a highly mathematical discipline. In the process, economics lost the critical dimension of time, essential for the long-run discipline of economic history. Economics became an ahistorical endeavour concerned with economic *outcomes* to the detriment of analysing the *processes* of historical economic change.

As to the limitations of the standard neoclassical model in addressing historical processes, North is forthright: 'for an economic historian, time has always been something that is fundamentally disturbing, because there is no time in neoclassical theory. The neoclassical model is a model of an instant in time, and it does not therefore take into account what time does …'[14] The analytical framework adopted here thus focuses primarily on the dynamic processes of institutional development which unfold over long periods of time. As a temporally orientated approach it seeks to explain both institutional change *and* institutional inertia in order to enhance our understanding of 'the enduring consequences that often stem from the emergence of particular institutional arrangements.'[15] As an application of this analytical framework I provide a path dependence comparative analysis to explain the very different historical trajectories of the two preeminent Greek poleis of our period, Sparta and Athens.

The analytical framework deployed here thus incorporates a number of approaches which are considered appropriate in attempting explanations in ancient economic history. However, despite its limitations as a tool for

13 North 1981, 3.
14 North 1999, 316.
15 Pierson 2004, 11.

analysing historical processes neoclassical economics is used, suitably augmented through the incorporation of institutional economics.[16] Additionally, the rational choice postulate in economics where the default behavioural impulse of *homo economicus* is *always* presumed to be to maximise his utility, is modified to one in which it is *generally* true that most people most of the time seek to maximise their material well-being. In this broader approach to human motivation, status and power are important features of the motivational matrix, but they are not considered to be the primary or predominant psychological drivers for whole societies across lengthy historical periods.

In pre-modern societies the adoption of dynamic strategies of conquest, commerce and colonisation could result in what Jack Goldstone refers to as an economic 'efflorescence'.[17] Broadly defined, an efflorescence is a sudden burst of economic activity and creative innovation that 'temporarily enabled gains in output to outpace increases in population size, thereby engendering intensive growth.'[18] To understand the dynamics of classical Athens we must abandon the oikos dichotomy of either pre-modern stagnation or modern growth and recognise that at various times throughout history many societies have experienced periods of both per capita and total income growth. I will argue that it is precisely this economic phenomenon that is in evidence in classical Athens and that it resulted from the adoption of a strategy of conquest which became manifest during the 6th century.

The military and political history of ancient Greece has been the predominant focus of much of classical scholarship. Within military history, treatments of hoplite encounters have greatly outnumbered those of naval warfare. For the archaic period this is understandable as land battles were the norm. But during the last few decades of the 6th century military confrontations intensi-

16 Modern critiques of the standard model of economics do not constitute an argument for its wholesale abandonment—Michelson-Morley's and Einstein's advances on Newton's laws of motion did not lead physicists to abnegate Newtonian physics.

17 Goldstone 2002, 334. More recently, in a major contribution to this debate Ober 2015,3–4 has used this concept of efflorescence to argue for a period of extensive economic growth in ancient Greece, one which lasted for several hundred years and 'peaked by around 300 BCE'. Similarly, Bresson 2016, xxi, who, building on considerable past work, offers a peerless economic portrayal of ancient Greece in which 'the focus on growth as the goal of economic-historical analysis is thus central to this book.' Harris et al. 2016, 6–9, also champion economic growth in which 'we forefront markets as a key element in understanding how the economy of ancient Greece functioned and in explaining economic growth.' All three represent signal advances in the recent scholarship of the economic history of ancient Greece.

18 Scheidel 2003, 136.

fied and, most significantly, naval engagements became a significant feature. It was a period of increasing inter-state rivalry within the Aegean, largely fuelled by growing trade and commercial competition. In this increasingly febrile and agonistic atmosphere a concerted pattern of Athenian conquest ambition began to emerge. Some early manifestations of this were her conflicts with Megara over Salamis and later with Aegina for control of the Saronic Gulf. But beyond her immediate bailiwick, Athenian interventionist policies extended to the northern Aegean. Resource rich Thrace was an early preoccupation as well as the Pontic sea routes which brought her into conflict with the Mytilenians. The northern Aegean was also the region in which Athens first encountered the regional superpower, Persia.

Unlike the standard neoclassical model which is static, the institutional analysis employed here is dynamic and so is particularly appropriate for analysing the processes of change in economic history. It has a diachronic perspective in which precipitating conditions can have on-going determining effects long after the critical conjuncture that caused them has disappeared. It also recognises that random historical events can influence the selection of particular outcomes and that 'small' events and not just 'big' ones may be significant in determining actual historical outcomes. Thus, institutional analysis is a reiteration of the concept that 'history matters' and provides an explanatory framework which assigns much of the motive power of history to institutions.

In this respect, it was the advent of a range of important institutions during the latter part of the 6th century (which I refer to as the late archaic transition) which in combination were instrumental in establishing the path dependence parameters that crystallised into what is traditionally referred to as the Themistoclean naval revolution of the following century.[19] Among the most notable of this serendipitous constellation of Athenian institutions were: Cleisthenes' democratic reforms, extensive monetisation linked to vastly expanded Attic sil-

19 The use here, as elsewhere, of the term 'Themistoclean Revolution' and its variants should not be interpreted as an indication that the Athenian navy of the 5th century was created *tout à coup* in 483, springing whole and complete from the head of Themistocles as suggested by Herodotus and especially Thucydides, and subsequently adopted by much modern scholarship. Just as the democratic revolution did not require a Cleisthenes, the naval revolution which transformed the political economy of classical Athens is best understood as the outcome of emergent processes within a complex adaptive system, and so did not necessarily require a Themistocles. Neither is it an attempt to deny the important role that Themistocles played in these events. In path dependence terms the institutional groundwork upon which Themistocles expanded the navy had been laid over previous decades—in reality, it took many decades for Themistocles' navy to become what is often presented as an overnight success.

ver production, fiscal expansion, and transition to a polis navy consisting of triremes. This complex of 6th century institutional innovations in combination with an enormous expansion in money supply (due to increased silver production, and later, tribute), distributed widely as naval pay (and later as political pay) created an immense dynamic of economic growth. Thus, the late archaic transition provided the institutional *mise-en-scène* for the rapid flourishing of the 5th century naval economy without which it may not have happened or, may have been less dramatic.

Accompanying its bleak presentation of the ancient economy as stagnant is a concomitant insistence in much scholarship that technological innovation was also absent. This, as Walter Scheidel has astutely observed, has meant that the debate on technological innovation in the ancient economy to date has left 'little room for nautical technological innovation as a significant driving force of economic development.'[20] This lacuna has arisen from a crude and inappropriate application to ancient societies of the well-attested linkages between technological innovation and modern economic growth. But instances of premodern economic growth could have other foundations. The political economy of Athens was sustained by its dynamic strategy of conquest which, as rational actors, is precisely where the Athenians invested their innovation resources; in defensive infrastructure and naval technology. The trireme itself represented an enormous leap in naval technology in which significant technological innovations such as the ram and mortise-and-tenon shipbuilding techniques were incorporated. Though it is far from extensive, the archaeological evidence presented here indicates that these critical nautical innovations were being widely adopted in Greek shipbuilding during the late archaic transition.

Essential to its enhanced economic analytical methodology is this work's treatment of the economy not as a static equilibrium entity, but as a complex adaptive system in which micro-level actions of autonomous economic agents create macro-level patterns and structures—macroeconomic emergent phenomena.[21] It is this not-quite-regular not-quite-random nature of a political economy that causes it to depart regularly from its neoclassically-ordained

20 Scheidel 2011, 37.

21 Hodgson 2002, 259–281. This way of viewing the economy arises from the linking of evolutionary theory and economics in what has become known as 'complexity economics'. At a certain stage of institutional development which when combined with greater intensity of individual actor interactions, the networked structure of the economic system behaves in a non-linear path dependence manner leading to a new level of self-sustaining economic growth. For a detailed analysis of the role of evolutionary theory in economics see also Hodgson 1993.

rational-equilibrium position. One of the most spectacular departures from this posited rational-equilibrium was the Great Depression of the 1930s (with the 2007–2008 global financial crisis not far behind) to which J.M. Keynes responded with a macroeconomic tour de force, *The General Theory of Employment, Interest and Money*. In this Keynes outlined his counter-intuitive and (at the time) economically-heretical proposal of demand-led economic growth through massive state spending which became widely adopted by post-war governments. As ancient history finally emerges from the penumbra of the oikos debate and the reality of market exchange and economic growth in classical Athens is increasingly accepted by ancient history scholars, there remains one further unexplained piece of the jigsaw: what gave rise to the Athenian economic efflorescence and is there an economic explanation for it?[22]

In trying to account for the economic growth of classical Athens, the microeconomic aspects in which the economy functioned through instrumental behaviour in the pursuit of enlightened self-interest by the butcher, brewer, and baker, is a given. But far more significant is its macroeconomic approach in which Athenian economic developments are analysed not through a standard production/supply model, but through an employment/demand framework in which large-scale expenditure on its naval defence economy will be shown to have laid the foundations for a period of exceptional economic growth. In the concluding section, the argument is made that the economic efflorescence of classical Athens was primarily due to the massive boost in gainful employment created by the unprecedented levels of state expenditure on the naval economy: a text-book example of Keynesian state-sponsored demand-led growth. But to understand the genesis of this phenomenon, and the naval economy on which it was founded, we must look to events which unfolded during the late archaic period, especially the last few decades of the 6th century.

Though many consider a proclivity towards violent behaviour to be an innate part of human nature, until recently the behavioural science of economics has not considered war to be a part of its remit. In the 'Military Revolution' debate of recent decades, economists and economic historians, whom one might have expected to have had a keen interest in the enormous expenditures involved in warfare, have remained aloof from the debate. An extensive litera-

22 Within the last decade several significant scholarly publications on the economy of ancient Greece have been published, many of which have a focus on Athens: Amemiya T. 2007; Acton P.H. 2014; Bresson A. 2016; Engen D.T. 2010; Flament C. 2007; Harris E.M. et al. (eds.) 2015; Lyttkens C.H. 2012; Manning J.G. et al. (eds.) 2005; Ober J. 2015; Scheidel W. et al. (eds.) 2007.

ture has developed in recent decades on how the evolving demands of war were instrumental in building state capacity and contributing to the emergence of the early-modern nation state in Europe. An extension of this perspective has argued, with considerable merit, that it was these extensive and growing military commitments that not only shaped the structures of the early modern state and its economy but led directly to 'the rise of the West' and its global dominance from the 19th century onwards. I will argue that the Athenian naval revolution exhibited many of the features of the later European one: a state navy, specialised warships replacing merchantmen, new line-of-battle tactics, unprecedented investment in ships and on-shore naval infrastructure—and all this over two thousand years before a similar process occurred in Europe. Just as the military, naval and defence innovations of early-modern Europe had transformative social, political and economic consequences for those societies, the Athenian naval revolution had concomitantly enormous socio-economic and political repercussions for classical Athens.

There are four principal reasons for framing my analysis of the Athenian political economy from the perspective of its naval sector. First, as identified by Saller, the most significant drivers for economic growth in the ancient economy such as trade, increased capital investment, technological innovation, increased specialisation and the division of labour and institutional innovation are all key features of the naval economy.[23] Second, the naval sector had a dominant position within the overall economy and accounted for the single largest component of Athenian expenditure for over 150 years. Third, the Athenian strategy of conquest of the Aegean basin and its hegemonic ambitions with respect to the eastern Mediterranean in general were fundamentally dependent on possessing a large fleet of triremes manned by well-trained and skilled sailors. Fourth, the consequences flowing from the existence of this naval behemoth were not just economic, they were also political. The largescale involvement of citizens as sailors—especially the most numerous and lowest social class the thetes, whose new economic status as paid employees in a cash economy would have helped increase their claim on political power—served to expand the radical direct democracy experiment.[24]

23 Saller 2005, 232.

24 This is not to argue the ideological cohesion position of the 'trireme school of democracy' or, for that matter, to gainsay the fact that Athenian trireme crews comprised a mixture of citizens, metics, slaves and foreign mercenaries; Hunt 1998, 40–41, 83–101; Gabrielsen 2001, 80. The burgeoning naval economy transferred substantial numbers of citizen thetes from the subsistence (underemployed) sectors to regular gainful employment in the monetised economy.

Classical scholarship has of course recognised this naval transformation in a broad sense and considered its political implications. But, surprisingly, the enormous consequences for the political economy of the scale of these naval developments has not been fully appreciated.[25] The sheer size of the infrastructural investment in its naval economy by Athens was unprecedented in the Greek world. Added to this was an operationally active fleet of between 200 and 400 triremes for most of the 5th and 4th centuries, involving an average annual expenditure in the range of 500 to 800 talents for much of the period. In passing, it should be noted that in dealing with both the political economy of classical Athens and its navy, the difficulties relating to numerical data posed by our extant sources are, to say the least, challenging. It is not just that economic data as commonly understood simply do not exist, but even where numbers are given by our sources they are often suspiciously round and require careful contextual assessment.

A primary function of modern governments (consuming increasingly large amounts of GDP) is the provision of public goods such as health, education, social welfare and national defence. For a variety of economic reasons, the private provision of a socially optimal level of public goods fails and the government steps in (increasingly in modern states by both financing and producing the good itself). Faced with the dilemma of providing its most pressing public good, national defence, where neither financing through taxation nor direct provision by the state alone was feasible, the classical Athenians devised a remarkably exceptional institutional device—trierarchy. As in other fields of endeavour, Athenian responses to the economic challenges it faced were equally innovative.

The institution of trierarchy lay at the heart of the Athenian naval economy. It was the mechanism through which Athens was able to finance and man its enormous fleet of triremes. As an integral part of the system of liturgies through which members of the wealthy elite of Athens were obliged to fund a range of public goods, trierarchy was the most financially demanding of all. Economic actors' interests, including long-term material self-interest, are historically contingent and shaped by political processes and social practices. Thus, institutions like trierarchy serve to regulate actor/agent behaviour by aligning individual self-interest with the policy objectives of the wider society as expressed through its political power structures. Compliance by trierarchs with the behavioural norms demanded by trierarchy had an important element

25 Gabrielsen 2001, 72, who suggests that the 'economic and social implications of naval warfare remain largely unexplored.'

of instrumental behaviour associated with it. As group social identity theory indicates[26] the self-interested motivation of wealthy individuals to be considered part of the Athenian elite was, in itself, a significant incentive to ensure compliance.

But institutions such as trierarchy are not reified objects, their very mutability lends them an inherent capacity to adapt to changing circumstances which ensures their long-term survival. In this respect, trierarchy's short-term stability combined with its long-term flexibility were essential features in the successful delivery of Athenian conquest strategy. Trierarchy's absolute performance in this respect was singularly successful. Trierarchy had one other laudably beneficial feature: it was operationally efficient. Trierarchy required no full-time bureaucracy worth talking about. By reducing transaction costs, trierarchy was both an effective and efficient institutional solution to the mammoth task of funding Athenian naval expenditure.

It was the radical shift in naval expansionism that set Athens on a new strategic path of dynamic conquest, which transformed its economy and society in a matter of decades. The consequent capital investment and labour requirements of this decision necessitated the rapid acquisition of new technological and organisational skills, which laid the basis for a mixed private and public economy. This fundamentally altered the balance of the economy away from agriculture, stimulating employment in manufacturing, services and other sectors on an unprecedented scale. This restructuring of the economy spurred economic growth, new patterns of trade, increased urbanisation and labour specialisation, all of which were facilitated by ongoing institutional innovation. In contrast with a largely yeoman-style hoplite army supplying its own equipment, the naval economy provided paid employment for tens of thousands of *thetes* (the lowest socio-economic class)—in addition to metics, mercenaries and slaves—on ships, in the dockyards, and ancillary services: the thetes enhanced economic status was soon reflected in increased political power through institutional reform.

Modern scholarship has long promoted a causal association between military service and access to political power. In this view, hoplite military participation was vested with considerable political leverage in which the new hoplite defenders of the community acquired extensive political rights, out of which emerged a new phenomenon—the citizen yeoman infantryman. It was a process whereby the aristocratic elites' political power monopoly was gradually undermined. Solon's early 6th century socio-economic classification of

26 Tajfel and Turner, 1986. See also, Turner and Oakes 1986.

the Athenian population into four categories based on their productive capacity provides the taxonomic framework for the scholarly debate on the link between access to political power and military function. The pre-eminence of hoplite ideology within classical Athens is sharply underlined by their overwhelming presence in contemporary Athenian iconography; incongruously so at a time when, arguably, the sailors of the Athenian fleet were militarily far more critical for Athens.

Just as hoplite political participation rights stemmed from their military service, it is argued that as the navy grew in military significance, the thetes rowers (the lowest socio-economic group) also acquired political access rights. Thus, in scholarly debates, the Hoplite School of Democracy is mirrored by the Trireme School of Democracy in which thetes rowers developed a type of class consciousness and increased political assertiveness just by rowing together in triremes. Further sociological arguments are made that this rowing experience engendered a love of liberty with deep-seated democratic proclivities on the part of the thetes. But the fact is that Athenian trireme crews were very much a mixed bag, consisting of thetes sharing the rowing benches with foreign mercenaries, metics and even slaves, with citizen-thetes often being in the minority. However, the postulated thetes' predilection for democracy may not have been as immutable as some modern scholarship asserts. It largely ignores the overwhelming source evidence that sailors had an abiding interest in their economic well-being (usually expressed in terms of pay) for which they were prepared to desert, join particular trierarchs, mutiny, even join enemy fleets, and on one celebrated occasion (Samos) switch between supporting oligarchic tyranny and democracy, depending on which way the financial winds were blowing.

To summarise then, my approach has four important aspects.[27] First, an analytical framework which extends the standard neoclassical economic model by including an institutional dimension in the analysis. Second, a broad chronological purview starting from the last decades of the 6th century and finishing within two decades of the end of the 4th century. This aspect incorporates both synchronic and diachronic elements because part of the methodological approach adopted encompasses concepts such as path dependence, which necessitates evaluating causes and consequences that are often separated in time. Third, a specific thematic perspective which charts the development and evolution of the Athenian navy from a privately owned penteconter fleet into a

27 These four dimensions are offered as an explicatory aid and should not be considered hermetically sealed entities: there is, of necessity, considerable overlap in their analytical application.

state-owned trireme fleet during the late archaic period and its full flowering as the pre-eminent Aegean naval force during the first decades of the 5th century. The unfolding of this process had profound consequences for the historical trajectory of not just Athens and Greece, but of the wider Mediterranean region. More particularly, the scale of these naval developments, including the number of triremes, manpower requirements and investment in maritime infrastructure, all necessitated unprecedented levels of capital and current expenditure. This, combined with the development of an institutional framework capable of delivering a naval sector on this scale, had transformative effects on the political economy of classical Athens. Fourth, the economic dimension considers how the advent of this naval economy fundamentally altered the balance of the Athenian economy away from subsistence agriculture, stimulating population growth, urbanisation, increased division of labour and, above all, paid employment on an unprecedented scale. It was the combination of these factors which provided the catalyst for unprecedented levels of economic growth—the exceptional efflorescence of classical Athens.[28]

In utilising new institutional economics, I attempt to explain the emergence, persistence and evolution of significant institutions within classical Athens, and the dynamics of their interrelationships. As indicated at the beginning of this introduction, of central importance is this works' analysis of the Athenian political economy from the perspective of its navy; arguably one of classical Athens' most important institutions. The enormous consequences for the Athenian political economy of the scale of its naval activities has not been fully appreciated. The sheer size of the infrastructural investment in its naval economy by Athens was unprecedented in the Greek world—the shipshed complex at Piraeus was the largest roofed building in antiquity with a capacity to house almost 400 triremes. Furthermore, as already indicated, the annual expenditure by Athenians on the operational costs (mainly pay and subsistence) of the navy was enormous. Thus, the radical shift in naval expansionism set Athens on a new path which transformed its economy and society in a matter of decades. The resultant massive injection of state-directed spending created levels of gainful employment which in turn precipitated a demand-led economic boom. In arguing that the Finleyan orthodoxy of a primitive Athenian economy is obsolete, this work also provides evidence for its claim that the classical Athenians were surprisingly modern by being, arguably, the first *de facto* Keynesians.

28 Goldstone 2002, 33 defines an economic efflorescence as a period which is limited in duration, but exceptional in terms of innovation, productivity and economic growth.

CHAPTER 1

Primitive Positions—the Oikos Debate

1 The Defining Quartet—Marx, Weber, Polanyi and Finley

From the Middle Ages through to the Renaissance, generations of European scholars have had an abiding fascination with ancient Greece and its legacy.[1] This reached new heights during the 19th century when much of this intellectual tradition viewed ancient Greece with an epigonic reverence, considering it to be the cradle of European civilisation.[2] Classical literary sources were drawn on extensively by many of the leading philosophers and theorists of the period, including the founding father of political economy, Adam Smith.[3] For the Classics scholar Karl Marx, antiquity's appeal was unsurprising: 'Why should not the historic childhood of humanity, its most beautiful unfolding, as a stage never to return, exercise an eternal charm?'[4] For Marx the theorist, however, this 'most beautiful unfolding' presented a fundamental conundrum: how could a society with a primitive economy such as classical Athens create a culture 'out of all proportion to the general development of society'?[5] The dissonance between what Marx perceived as its primitive economic foundations and the unprecedented flowering of the social, cultural and political aspects of Greek society was at odds with historical materialism's insistence on a direct correspondence between a society's level of economic development and its other aspects—in Marxist terms, the material base (economy) determined the superstructure (society). Having identified the dichotomy and the obvious dif-

1 Bouwsma 1979, 2; Beard and Henderson. 2001, 3–9; Belozerskaya 2002, 67–68.
2 As seen by this tradition, having extricated itself from barbarism by its own efforts, Greece was a peerless exemplar. For some, such as John Stuart Mill, this bordered on Athenophilia, as in an 1846 review of Grote's *History of Greece* when he wrote that '[t]he battle of Marathon, even as an event in English history, is more important than the battle of Hastings. If the issue of that day had been different, the Britons and the Saxons might still have been wandering in the woods.' Mill 1846, 273. Also see Goody 2008, 26–67 for an insightful critique of the presentation of ancient Greece as the font of European civilisation, in which he argues that the ancient economy was not 'as typologically pure and distinct as many European historians would have it'. I would like to express my gratitude to Edward Harris who, in a personal communication, pointed me in the direction of Goody's valuable monograph.
3 Stein 1979, 265–266.
4 Marx 1973, 111.
5 Marx 1973, 110.

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ficulty it posed for his materialist conception of historical development, Marx simply ignored it. As we shall see, the dichotomy which Marx identified but failed to resolve satisfactorily was an early indication of the intractable nature of the subsequent long-running and fractious scholarly controversy on the ancient economy—the 'oikos' debate.

On the face of it the ancient economy is an unlikely arena for bitter scholarly polemic, yet almost 120 years after its inception the oikos debate on the ancient economy still rumbles on, although with diminished intensity in recent years. Its longevity must make it the only scholarly debate in ancient economic history to meet the requirements of a Poisson process in mathematics: counter-intuitively, the length or duration of a process cannot be taken as an indication that it will end soon. The venerable pedigree of the oikos debate stretches back to the late 19th century when the 'primitivist' Karl Bucher published his three-stage theory of world history in which the oikos was seen as the foundation of the ancient economy. For political economists, such as Bucher, Rodbertus and Marx, despite its impressive achievements in many other respects, the classical world was based on primitive economic foundations.[6]

From the outset, the oikos debate crystallised into two principal camps, 'primitivists' and 'modernists'. The essential difference between the two sides centred on the organising principles upon which the ancient economy operated and, in particular, what motivated individual behaviour. The modernists insisted the principles were those of individuals seeking to maximise their utility in a market-exchange structure in which prices were largely determined by supply and demand. The primitivists regarded such motivational factors as inherently alien to a society in which behaviour was determined by non-economic impulses such as a desire for public esteem. In this view, the ancient economy had no separate existence beyond the aristocratic milieu within which it was embedded. Economic behaviour was determined by an aristocratic value system focused on achieving honour (τιμή) for demonstrated excellence (ἀρετή). Citing widespread trade, both local and long-distance, and extensive monetisation as corroborating evidence, the modernists argued for the existence of market exchange, especially in the case of classical Athens. For the modernists the difference between ancient and modern economies was simply a matter of scale not substance.[7] The primitivists countered that an ancient economy that bore any resemblance to a modern one presupposed active policies on the part of the state to facilitate commercial activity and pro-

6 Nafissi 2005, 3.
7 Morley 1998, 108.

mote productivity and growth.[8] The opposition to this primitivist analysis was led by the modernist Eduard Meyer, who in his response to Bucher argued that economies such as classical Athens had an economic system based on a developed market economy similar to that which had emerged in modern Europe.[9]

Many of the issues that were debated vigorously throughout the 19th century by the primitivists and modernists were also evident in the revived version of the oikos debate which continued, with varying levels of intensity, throughout the 20th century under the new rubric of 'substantivists' and 'formalists'. For almost a quarter of a century, the towering intellectual figure of Moses Finley dominated this latest phase of the debate. Finley's *The Ancient Economy* had an enormous influence on the direction of subsequent scholarship: 'No book this century has had such a great influence on the study of Greek and Roman economic history.'[10] When he died in 1986, his model of the ancient economy had become 'the new orthodoxy'.[11] The critique that follows is highly critical of both his methodology and many of his conclusions, but from the outset it is important to acknowledge his enormous achievements. Throughout his long and very active career he succeeded in bringing the ancient economy in general, and that of Greece in particular, to the forefront of academic debate. Beyond academia, he raised awareness of ancient history with the wider public to unprecedented levels through a range of extra-curricular activities: his *Ancient Economy*, re-published by Penguin as a paperback in 1999, is still widely read.

The debate has been lengthy and bitter with the entrenched position of both sides becoming a veritable fixture on the landscape of ancient historical scholarship; one that continues to defy decisive resolution. Part of the reason for the *impasse* is the fact that the ancient economy is virtually a statistics-free zone, thereby frustrating any attempts at cliometric analysis or econometric modelling which might offer, if not closure, at least some clarity. Deprived of quantitative data of any consistency or reliability, the debate's protagonists have been forced, *faute de mieux*, to rely on a plethora of disparate ancient sources from which qualitative and relative arguments are constructed in what is essentially a derivative debate. But beyond its narrow academic confines, the debate was also reflective of a wider societal ideological debate then current. Although rarely articulated explicitly at the time, these contemporary agendas are more easily identified with the benefit of hindsight. Throughout the

8 Engen 2004.
9 Cohen 2002, 1.
10 Morris 1985, ix.
11 Hopkins 1983, xi.

later stages of the debate there was considerable if tacit ideological satisfaction taken by left-leaning primitivists from the fact that, apparently, a society as emblematic for the whole of Western culture as ancient Greece was governed by a form of selfless communalism and not by the selfish exploitative instincts of modern capitalism.[12] The existence of such a benevolent social formation in antiquity added a probative value by emphasising socialism's 'naturalness' and, by implication, its superiority. The oikos debate is thus an illustration of the truism that, like all history, ancient economic history is written, consciously or otherwise, from the vantage point of the present: in Benedetto Croce's famous phrase, 'All history is contemporary history.'[13]

Though his emphasis varied over time, Finley relied largely on a combination of Marx, Weber, and Polanyi for much of his methodological analysis. His academic contribution to the ancient economy and to the oikos debate can be divided broadly into two phases: his US period, when Marx and Polanyi were the principal influences, and his post-1954 UK period, when his Marxist position was mediated (though never entirely supplanted) by Weberian influences. Finley's model was a holistic one founded on a non-dogmatic philosophical Marxism: 'Marxism is therefore built into my intellectual experience, what the Greeks would have called my *paideia*. Marx, like the other thinkers I have mentioned, put an end to any idea that the study of history is an autonomous activity …'[14]

A number of Finley's primitivist/substantivist intellectual proclivities were signalled very early in his academic career. In a review of *La civiltà del mondo antico*,[15] by the Italian ancient historian Ettore Ciccotti in 1937, Moses Finkelstein wrote,[16] 'The history of human achievement in every sphere of activity is the history of "co-operation", "association", "class conflict". To understand that history, then, it is necessary to focus attention on society and social relations, not on the individual'.[17] Finley disagreed with a central tenet of neoclassical economics: that because of scarce material resources, there was an innate human proclivity, in Adam Smith's phrase, to 'truck, barter and exchange' in pursuit of individual material well-being.

12 Cohen 2002, 6.
13 Croce 1941, 18.
14 Finley 1981, xi.
15 Ciccotti 1937.
16 In the U.S. he used his Jewish name, Finkelstein, which he changed to the more Anglicised Finley some years before moving to the UK in 1954, having been fired by Rutgers University for his refusal to cooperate with the House Committee on Un-American Activities.
17 Finkelstein 1937, 277.

There is little doubt that Finley set much of the agenda for the modern discipline of ancient economic history. He was in considerable agreement with Weber—both in his narrative content and his general methodology—as becomes clear from his comments in *Ancient History: Evidence and Models*.[18] Essentially, his method consisted of applying the concepts of modern social theory to critical aspects of the ancient economy. Apart from Weber, he relied heavily on Marx and the Frankfurt School of social theory in pursuing and executing this innovative project. Finley followed Weber—and especially his older contemporary, Polanyi—in arguing that there was no separate economy in ancient Greece. Instead, it was 'embedded' within an all-encompassing social structure and therefore was not amenable to analysis that used the behavioural assumptions of neoclassical economics. Since economic activities in the ancient economy were determined by non-economic values they were simply unavailable for economic analytical scrutiny. This 20th century substantivist position, like the primitivists a century earlier, argued that the ancient Greek economy was based primarily on self-sufficient households and while the oikos may have been involved in exchange, market exchange was not significant. For substantivists like Finley the non-applicability of neoclassical economic concepts such as utility and profit-maximisation to the ancient economy meant that new assumptions had to be developed. In the formulation of this new approach an early influence was Polanyi, for whom he worked as a research assistant in the U.S.

To better understand the nature of the oikos debate, its longevity, irresolution, and polemical nature, we must consider its wider ideological context as part of an on-going contestation of ideas regarding the nature of the individual. The whole primitivist versus modernist debate was influenced significantly by the emerging discipline of anthropology, in particular the work of one of the founding fathers of modern anthropology, Bronislaw Malinowski. Malinowski's extensive fieldwork amongst the primitive peoples of the Pacific Islands led him to conclude that the islanders' economy was founded not on trade and exchange, but on reciprocal gift giving: the antithesis of a capitalist economy. He was adamant that *Homo Economicus* did not dwell among primitive peoples.[19] Downplaying or simply ignoring the considerable evidence for trade in these societies, this portrayal of primitive society was also taken up by the

18 Finley 1985, 88.

19 Malinowski 2014 [1922], 60. By the same token, Malinowski also dismissed as 'an old prejudice' the notion of the existence of a primitive communist society used 'in support of communistic theories, and the so-called materialist view of history.' Ibid. 167.

French sociologist Marcel Mauss who promulgated gift-giving as a viable basis for fashioning a sense of community in modern Western society as an alternative to the alienation wrought by industrial capitalism.[20] Though anthropologists, classicists and many ancient historians subsequently adopted reciprocity as an alternative to market exchange in ancient societies, Mauss wrote *The Gift* for different purposes: 'part of an organized onslaught on contemporary political theory, a plank in the platform against utilitarianism.'[21] This was part of a long continental European tradition, especially French, of political antagonism to English liberalism's championing of individual liberty over a social and collectivist conception of human nature.[22] Following Mauss, virtually every leading social anthropologist from Levi Strauss[23] to Marshall Sahlins[24] has used this presentation of the economy of primitive societies as the basis for a critique of so-called consumer capitalism.[25] This was particularly so in the case of the economic anthropologist and historian Karl Polanyi, as he pursued his quest for an alternative to modern capitalism.

Based on these anthropological findings Polanyi commenced an impressive research programme into exchange, trade and money from which he concluded that the economies of all previous societies in history were embedded and that 'markets played no important part in the economic system; other institutional patterns prevailed.'[26] The exception was the self-regulating market system of 19th century Europe which was not only historically aberrant but the disembedded nature of its economy had socially destructive implications.[27] Research in empirical anthropology over the previous decades had also provided Polanyi with overwhelming evidence for 'the changelessness of man as a social being.'[28] However, man had fallen from his natural state as a social being because of his partaking of the forbidden fruit of liberal capitalism during the 19th century; but humanity would revert to its pre-lapsarian social nature once the destructive free-market system had collapsed, an event confidently predicted by Polanyi (and by Marx previously) as both inevitable and immanent. Polanyi further argued that liberal capitalism's replacement by a Christian vari-

20 Mauss 2002, 10–22.
21 Mauss 2002, x.
22 Siedentop 1979, 153–174, which contains a brief history of this discourse.
23 Lévi-Strauss 1962.
24 Sahlins 1972.
25 Bang 1998.
26 Polanyi 2001, 57.
27 Block and Somers. 1984, 57.
28 Polanyi 2001, 48.

ant of socialism could prove a boon for personal liberty: 'The passing of the market economy can become the beginning of an era of unprecedented freedom.'[29]

Polanyi propounded a form of Christian socialism that was both anti-Marxist and anti-market. In his magnum opus, *The Great Transformation*, he concludes that 'socialism is, essentially, the tendency inherent in an industrial civilization to transcend the self-regulating market by consciously subordinating it to a democratic society … socialism is merely the continuation of that endeavour to make society a distinctly human relationship of persons which in Western Europe was always associated with Christian traditions.'[30] Polanyi's principal aim was to prove that man's essential nature was social and communal—hence his need to present pre-industrial society as dominated by a redistributional/reciprocal paradigm. Guided by his political programme Polanyi viewed pre-modern societies like ancient Greece as large, complex, non-market economies. This justified his arguments for the possibility of a humane society without the need for either a capitalist or communist revolution.[31] However, during the 1950s when it came to a choice between liberal capitalism and Soviet Stalinism Polanyi chose the latter over what he deemed the greater evil, 'atavistic individualism'. He considered such individualism to be in conflict with man's collectivist essence. It would appear his antipathy to free market liberalism superseded any reservations he had regarding Stalinist totalitarianism.

It was in *The Great Transformation* that Polanyi exhibited his profound antipathy to markets and market exchange which 'led him to draw sharp and unwarranted distinctions between early and modern economies, in which exchange and markets typified only the latter.'[32] With the demise of academic Marxism in the 1990s and the international financial crash of the late 2000s Polanyi's critique of both Marxism and free-market liberalism has seen something of a revival.[33] Many of those currently critical of what they term variously as 'market utopianism', 'free market fundamentalism', or 'neoliberalism' have discovered a congenial alternative in Polanyi's unique blend of economic anthropology, social theory and political polemic, as propounded especially in *The Great Transformation*.[34] In a foreword to the 2001 edition of this book, the

29 Polanyi et al. (eds.) 1957, 256.
30 Polanyi 2001, 242.
31 Morris 1994, 353.
32 Granovetter 2005, 28.
33 Hindess 2007, 498.
34 England 2015, 30–32.

Nobel Economics Laureate Joseph Stiglitz suggests that 'the issues and perspectives Polanyi raises have not lost their salience … it often seems as if Polanyi is speaking directly to present-day issues. His arguments—and his concerns—are consonant with the issues raised by the rioters and marchers who took to the streets in Seattle and Prague in 1999 and 2000 to oppose the international financial institutions.'[35]

For Weber, the autarky of the oikos was an essential feature of the ancient economy. However, in the case of Greece, he believed that the emergence of the polis led directly to the decline in economic importance of the oikos and insisted that, 'in antiquity the policies of the polis necessarily set the pace for capitalism'.[36] He explained his radical conclusion as follows: 'Where we find property is an object of trade utilized by individuals for profit-making enterprises in a market economy, there we have capitalism. If this is accepted, then it becomes perfectly clear that capitalism shaped whole periods of antiquity, and indeed precisely those periods we call "golden ages" '.[37] Weber's insistence on the emergence of a market economy in classical Athens set him at odds with Marxism whose historical determinism precluded the possibility of the development of an 'advanced' stage of capitalism in a 'primitive' epoch dominated by 'the slave mode of production'.[38] Even more disturbing for many primitivists/substantivists was Weber's claim of a causal association between a market economy and the emergence of democratic institutions in classical Greece: a confluence that was as unacceptable to Finley as it was to Polanyi. The contingent association between political freedom and the market economy was anathema to both—though for quite different reasons. Polanyi sought to highlight the exceptionalism of 19th century capitalism while Finley abjured the application of neoclassical economic analysis to the ancient economy.

Finley relied predominantly on literary sources and philological analysis for the evidence for his model.[39] Though he advocated the use of archaeology as a complementary source of evidence for the ancient economy, according to Morris, 'in practice, he virtually ignored archaeological data'.[40] Morris suggests that in so doing Finley did ancient economic history a grave disservice, arguing that a combination of textual and material evidence would have facilitated

35 Polanyi 2001, vii.
36 Weber 1909/1976, 42–50.
37 Weber 1909/1976, 51.
38 Nafissi 2005, 95.
39 For a discussion on Finley's censure of historians and classicists who failed to consider the limitations and fallibility of ancient literary sources see below.
40 Manning et al. 2005, 102–104.

more rigorous and systematic comparative analysis across the broad range of his field of enquiry. He concluded that, 'had Finley taken the material record more seriously he might have developed a different model in *The Ancient Economy*'.[41] This led Finley to underestimate the extent of technical innovation. In his view, changes in technology such as that from hand-painted pottery to moulded design did not come about because they were faster or cheaper but for 'psychological' reasons—a response to a new fashion. The principal reason proffered by Finley for the absence of technical innovation throughout the economy was the dearth of investment by wealthy land-owners, whom he believed were the only ones with sufficient capital resources to make such investments. Unmotivated by economic rationalism, they took the easy option and invested in agriculture, as innovation was inimical to the rentier mentality of these wealthy land-owners.[42]

Substantivism achieved considerable currency within academic circles in the latter half of the 20th century as part of a broader movement of 'cultural relativism' based on the theory and fieldwork of cultural anthropologists such as Bronislaw Malinowski, Franz Boas and his student Margaret Mead. This cultural anthropology flatly contradicted the notion that fundamentally people are the same everywhere and in all periods. In the case of Mead this resulted in her presenting a highly idealised and far-fetched account of Samoan culture—one that subsequent investigations proved to be seriously flawed.[43] Finley was heavily influenced by this cultural anthropology. For Finley, the ancient economy was essentially agrarian and subsistence-focused in character. It was one where economic decisions were determined by familial, religious and socio-political values, and where status-maximisation—not profit-maximisation—was the motivational force that governed economic behaviour.[44] This was the normative beating pulse at the heart of Finley's methodological approach.[45]

41 Manning et al. 2005, 102–104.

42 Finley 1965, 31,39.

43 Cartledge et al. 2002, 58. The controversy surrounding Mead's Samoan research ignited when anthropologist Derek Freeman contradicted her work and accused her of fraud; see Freeman D. 1983. It still divides scholars and has spread to other disciplines, including cognitive science: 'Margaret Mead disseminated the incredible claim that Samoans have no passions—no anger between parents and children or between a cuckold and seducer, no revenge, no lasting love or bereavement … no adolescent turmoil. Derek Freeman and other anthropologists found that Samoan society in fact had widespread adolescent resentment and delinquency, a cult of virginity, frequent rape, reprisals by rape victims' families … sexual jealousy and strong religious feeling.' Pinker 2009, 368. For a full account see Shankman 2009.

44 Burke 1992, 199.

45 Morris 1985, xx.

To give further credence to his contention that no separate economy existed in pre-modern societies Finley claimed that nothing approaching economic analysis existed in classical literature.[46] Finley was adamant, '… there is no economic analysis in Aristotle …' which was accompanied by a forthright admonition that 'judgments of his performance on that score, or attempts to interpret his words so as to rescue them as economic analysis are doomed from the outset'.[47] But contrary to primitivist assertions that economic concepts played no part in the wisdom of the ancients, there is extensive commentary in Aristotle, Xenophon and others on a wide variety of aspects of the economy: it simply does not correspond to our conception of the economy. In the case of Aristotle this was not a failure to appreciate economic issues—he had a fundamental antipathy on ethical grounds to what he saw.[48] For Aristotle, the unlimited nature of market exchange invited the evil of unlimited acquisition and greed—a view largely echoed by many modern critics of so-called 'neoliberalism'.

Beyond the particularities of Finley's claims—the inapplicability of economics, embeddedness, status, the predominance of the autarkic 'oikos', and the absence of ancient economic analysis—there were other, more general, problematic elements within his model. It posited the essential unity of the ancient economy stretching over a period of 1,500 years, from 1,000 BC to 500 AD, and incorporated diverse regions from the Mediterranean basin and the Near East.[49] This enormous geographical and chronological spread, while reflective of Finley's extensive and deep erudition, rendered it an inherently over-wrought framework resting on faulty ideological foundations. Relying on a conflation of highly selective evidence from disparate regions and eras, Finley's substantivist model contained inherent flaws such that it risked falling between 'the Scylla of superficiality and the Charybdis of hermeneutical incoherence.'[50] Its overly extended and static nature failed to describe (never mind explain) significant aspects of a dynamic and fast-changing society such as classical Athens. The model's rigidity was at odds with a period that experienced considerable, and at times, rapid and radical change.

46 It can also be argued that by this standard ancient Greece produced nothing by way of political theory either—no systematic written treatise on democratic political theory has come down to us. Loraux 1986, 173–180; Brock 1991, 160. Also see Jones 1986, pp. 41–43; Finley 1985b, 28; Raaflaub 1983,517,1990,33 and Ober 1998, 30.

47 Finley 1987, 113.

48 Stimson and Milgate 2008, 492.

49 Finley 1985a, 29–33.

50 Cartledge et al 2002, 3.

But Finley's analysis of the ancient economy, which spanned almost five decades, did not constitute an invariant monolithic whole from start to finish.[51] Indeed, a close reading of his work reveals that over time Finley's views changed with respect to some key elements of his model, especially, as we shall see, its economic aspects. But initially, we will review Finley's treatment of a number of 'sociological' issues that were central to the whole primitivist/modernist debate, in particular, those relating to; 'slave society', 'Asiatic mode of production', 'status' and 'class'. As confirmed by Garlan, Marx's stages conception of history had a decisive influence on the subsequent debate on the role of slavery in the economy of ancient societies.[52] Finley's early adherence to the orthodox Marxist interpretation of historical development in which the Asiatic (slave) mode of production was integral is evident from his overwhelmingly positive review of Ciccotti's, *La civiltà del mondo antico*: 'I know of no discussion of ancient economy that is comparable to Ciccotti's eighty-two pages.'[53] Unsurprisingly for the Italian translator of the works of Marx and Engels, the book contained the traditional Marxist historical materialist approach to the ancient economy in which 'he clearly justifies the retention of the traditional unity of the ancient world … (which) at the root lie(s) slavery …'[54] However, from the 1950s onwards Finley's conception of ancient slavery began to diverge increasingly from Marxist historiography.[55] What began as a critical distance soon become a chasm until a final break was signalled with the publication of 'Was Greek Civilization Based on Slave Labour?' in 1959.[56] By 1973 his rejection of slave labour as the foundation of the economy of ancient societies like Greece was total: 'it is essential, in my view, to lay the ghost once for all of the slave mode of production as the hallmark of the ancient economy'.[57]

Finley's privileging of status over class within the ancient economy was also at variance with the standard Marxist order of categories: a breach of orthodoxy

51 Shaw and Saller (eds.) 1981, xii. Shaw and Saller maintain that Finley's rigid Marxism was being replaced 'by an interdisciplinary approach to a holistic analysis of society'. As I have argued below, Finley's primitivism and Marxism modified over time, but neither was ever 'replaced'.

52 Garlan 1982.10–13.

53 Finkelstein 1937, 278.

54 Finkelstein 1937, 278.

55 For a detailed and comprehensive analysis of Finley's evolving attitude to slavery in the ancient economy see Nafissi 2005, 223–229.

56 Finley 1959.

57 Finley 1985a, 179.

for which he was heavily criticised by more conventional academic Marxists.[58] Ste. Croix maintained that class was an important analytical category for Aristotle, arguing that Aristotle 'always proceeds on the basis of a class analysis and takes it for granted that men will act, politically and otherwise, above all according to their economic position.'[59] While class for Ste. Croix was not the only category, it was the only category that could explain change in the ancient Greek world.[60] The fact that both Aristotle and Marx shared a similar position regarding the importance of class in political and economic analysis also had a propitious epistemological outcome for Ste. Croix; it underwrote the validity of Marxism as an analytical method in ancient Greek historiography.[61]

Unsurprisingly, Finley's use of status—which he conceded was 'an admirably vague word'—as an alternative to class was vehemently opposed by Ste. Croix who, as a consequence, questioned Finley's familiarity with Marxism.[62] Though criticised by many academic Marxists for his abandonment of 'class' as a category and 'class struggle' as the driving force for change in ancient societies, Finley's methodological approach was fully consonant with that of historical materialism.[63] The *Communist Manifesto* of 1848 contains Marx's much quoted statement, 'The history of all hitherto existing society is the history of class struggles', but Marx later qualified this in the case of pre-industrial societies, in which he considered 'class' to be a far less important category than 'rank' or 'status'. By 1869, with the publication of *The Eighteenth Brumaire of Louis Napoleon*, Marx had modified his views considerably with respect to class and ancient societies: 'in ancient Rome the class struggle took place only within a privileged minority, between the free rich and the free poor, while the great productive mass of the population, the slaves, formed the purely passive pedestal for these combatants.'[64] In *Ancient Economy*, Finley reiterates the prior importance of status over class in ancient societies, as well as the concept's fidelity to mainstream Marxism by favourably quoting the Marxist,

58 Ste. Croix 1981, 57, 63–64.
59 Ste. Croix 1981, 79, 69–80.
60 Ste. Croix 1981, 45.
61 Ober 1991, 113.
62 Ste. Croix 1981, 58–59; Finley 1983, 10, in this later publication Finley chides Ste. Croix for having 'turned Aristotle into a Marxist.' In this work Finley also reverts to the use of the word 'class' in place of 'status' but stresses that this 'does not imply a change of view', adding, 'I have also used the term "class" loosely.'
63 A method of explaining the evolution of society as its material or economic base goes through a number of identifiable stages; primitive communism, slave society, feudalism and capitalism.
64 Marx 1964 [1869], 7.

George Lukacs' statement that 'in pre-capitalist societies "status-consciousness … masks class consciousness"'.[65]

Almost two decades earlier the maverick Marxist was paraphrasing Marx and wondering 'why the history of all hitherto existing society is so often the history of the absence of class struggles …'[66] It prompted him later to conclude that what explained economic behaviour in the ancient economy was the existence of a spectrum of 'statuses and orders' and 'invariably, what are conventionally called "class struggles" in antiquity proved to be conflicts between groups at different points of the spectrum …'.[67] Thus for Finley, as for Marx, the 'class struggle' was not an appropriate analytical concept to explain change in ancient societies such as Greece. Classes existed in such societies but they were politically inert and so political change could only be explained by conflict between 'status' groups. It is an axiom of historical materialism that conflicts within classes, as with conflicts within status groups, are resolved not at the economic or cultural level but through the political structures of the state. In this way, Finley eschewed the economic reductionist model as applied by the so-called 'vulgar' Marxists by adopting a form of historical materialism propounded by the 'later' Marx of the *Grundrisse* which recognised that dynastic and aristocratic hegemony in pre-industrial societies were as valid a basis for political power as were class affiliations based on the means of production in industrial ones. On the relevance of class analysis Finley finally concluded that it simply 'does not seem a very sensible way to analyse ancient society'.[68] All of this goes some way to explain several important aspects of Finley's approach to the economy of ancient societies. In particular, his later privileging of 'status' over 'class', his denial of the relevance of economic analysis and its absence from classical philosophy,[69] his early critique and eventual abandonment of the slave mode of production and his insistence on economic embeddedness. But these aside, there was one aspect of his model which was constitutive of his central conclusion that there was no such thing as 'the economy' in ancient society—his attitude to trade and exchange.

It has long been an article of faith for many anthropologists, sociologists and ancient historians that the concepts and approaches of economic the-

65 Finley 1985a50–51.
66 Finley 1967, 202.
67 Finley 1985a 68.
68 Finley 1985a 49.
69 Meikle 1979, 57. Scott Meikle, is highly critical of Finley's claim that Aristotle contains no economic analysis—it just contains no neoclassical economic analysis. For Meikle, Finley's position is one 'historically associated with Joseph Schumpeter among others, which is strongly animated by anti-Marxist twentieth-century methodological orthodoxy.'

ory are not appropriate for the analysis of the performance and structure of ancient economies.[70] Polanyi's principal contention was that resource allocating markets only came into existence during the 19th century and so were not the norm for most of human history, including ancient Greece, when reciprocal and distributive systems prevailed.[71] The principal appeal of Polanyi's approach was that it offered a clearly articulated alternative analytical framework for the study of ancient economies which was radically different from that of either Marxism or neoclassical economics—both of which only emerged in response to industrial capitalism.[72] Yet, despite his visceral antipathy to market exchange, in his later work even Polanyi was to concede that in the case of Greece 'the part played by market elements … was of importance to the economy as a whole.'[73] Similarly, Finley also began to express reservations regarding primitivist assumptions on trade and exchange, especially with respect to ancient Greece. By the early 1960s, in accordance with the dictates of his continuing research, Finley's primitivist position had begun to shift.[74]

His difficulties regarding the economic role and importance of trade in the ancient world were not new. They had been signalled during the mid-60s when, arguing that ancient states did not have a trade policy and that trade was not the main reason for the 'movement of goods', he admitted that a clearer understanding required further study, adding 'I do not know what the right answers are.'[75] In 'Further Thoughts', he does not so much argue against trade per se in the ancient economy which he accepted, but rather against a fully integrated form of trade.[76] In economic terms, however, this is a distinction without a difference as few would argue that ancient trade achieved anything like the degree of integration or sophistication achieved by modern economies. In the ancient world international trade was a high-risk business as reflected by the prevailing price-mechanism of interest rates where the evidence for Athens shows that maritime loan rates were far higher than for other types of lending.[77] High transaction costs resulting from, for example, poor communications and low levels of technology would have made such exchanges less efficient and less numerous (less optimal in economic jargon).[78] Though he does not express it

70 North 1977, 703–704.
71 Polanyi 2001, 57.
72 Dalton (ed.) 1971, xiv.
73 Polanyi 1981, 146.
74 Nafissi 2005, 232.
75 Finley (ed.) 1965a, 15–16.
76 Finley 1985a, 177–178.
77 Millett 1991, 190–193; Cohen 1992, 52–58.
78 North 1977, 710.

in transaction cost terms, Finley recognised these precise difficulties in the case of Athenian grain traders who 'were hampered by the rudimentary technology in both the transmission of information and the movement of bulk goods'.[79]

Finley's position seems to have changed over time from one in which he downplayed the economic significance of ancient trade as unimportant, to one in which he viewed it as less sophisticated in comparison with modern trade—an important shift from an absolute to a relative position. Moreover, he readily accepted the considerable evidence for instrumental behaviour among the key economic actors in the Athenian grain trade as 'grain producers and shippers tried when they could to aim for markets known to be more favourable to the seller' and where 'grain prices fluctuated considerably and rapidly, with an almost instantaneous response to changes in supply'.[80] In his 1972 lecture, 'Anthropology and the Classics',[81] Finley's disenchantment with Polanyi's approach to the ancient economy had reached breaking point; he jettisoned one of primitivism's central contentions. Finley pronounced that Polanyi's efforts to deny market exchange in pre-industrial societies 'must be deemed a failure' adding that 'the intrusion of genuine market (commercial) trade … into the Greek world … render(s) the primitive model all but useless.'[82] Finley had moved a long way from a world characterised by 'gift exchange', 'status' and 'reciprocity', representing yet another departure from primitivism and Polanyi's hitherto sacrosanct exchange taxonomy of reciprocal or redistributive exchange mechanisms which were deemed to characterise all pre-modern societies.

Yet, incongruously, while claiming lineal descent from Weber, Hasebroek and Polanyi, Finley remained steadfast in his affirmation of 'the inapplicability to the ancient world of a market-centred analysis'.[83] He reasserted his guiding principle that the values and behavioural assumptions of neoclassical economics were 'invalid for antiquity', the consequences of which were that 'we have, I suggest, to seek different concepts and different models, appropriate to the ancient economy.'[84] But assertions of the inappropriateness of economic analysis apart, neither Finley nor the primitivists adduced any evidence for the validity of the alternative exchange postulates, reciprocity or redistribution, as

79 Finley 1985a, 178.
80 Finley 1985a, 178.
81 The Jane Harrison Memorial Lecture delivered 13th May 1972, Newham College, Cambridge and first published in *The Use and Abuse of History*, 1975, London.
82 Finley 1975, 117.
83 Finley 1985a, 26.
84 Finley 1985a, 26–27.

the basis of the functioning of economies such as classical Athens. Moreover, absent the economic motive of long-run material self-interest from the ancient economy, how do we explain its functioning over time?

This failure to develop any alternative concepts or models for such societies, while simultaneously accepting much of the considerable evidence for extensive market exchange and instrumental economic behaviour, amounts to a glaring inconsistency in primitivist epistemology. In the case of Finley, the source of this incongruity has two possible explanations, both of which are related. First, the primitivists' predilection for social anthropological and sociological explanations of human behaviour was accompanied by an antipathetic attitude to economic science in relation to the ancient economy. Second, and partly because of this, ancient historians failed to develop a meaningful engagement with the discipline of economics; a failure which contributed to misunderstandings and misapplications of some essential economic concepts, as a brief analysis of Finley's treatment of economics may help to illustrate.

To have a better understanding of Finley's approach to the ancient economy we need to look at what he terms his definition of economics.[85] It is one taken from a book by Erich Roll[86] first published in 1938, entitled *A History of Economic Thought*,[87] which Finley quotes as follows: 'if, then, we regard the economic system as an enormous conglomeration of interdependent markets, the central problem of economic enquiry becomes the explanation of the exchanging process, or, more particularly, the explanation of the formation of price.'[88] There are a number of aspects of this quotation which are noteworthy. Though a distinguished public servant and an academic economist for a time, Eric Roll, was not in the first rank of British economists and, according to his obituary in the Guardian, he made no 'original contributions to economics.'[89] Second, as is evident from the quotation itself, it is a description of an economic system with an emphasis on exchange and price formation: it is not a definition of economics. Third, even as a would-be definition of economics, it lacks some

85 For a more succinct, comprehensive and much-quoted definition of economics, also from the 1930s, see that of Lionel Robbins p. 40 below.

86 Eric Roll was an academic economist at Hull University for six years before joining the British civil service in 1941 where he served in various senior roles until 1968 when he became a director of the Bank of England and later chairman of the merchant bank SG Warburg. He was made a peer, Baron Roll of Ipsden, in 1977. For a full account see Roll 1985.

87 Roll 1945, 373.

88 Finley 1985, 22.

89 Guardian Obituary, http://www.theguardian.com/news/2005/apr/02/guardianobituaries.politics, accessed 27.3.2016.

key definitional aspects such as references to scarcity and choice, an omission to which Finley himself alludes in a qualifying endnote, before dismissing it: 'Roll does not introduce into his definition the element of "scarce resources" that is common in other formulations, but that does not in the least affect my point.'[90] As a basis for either theoretical elaboration or critical analysis this is a restrictive and deficient definition, perhaps reflecting Finley's preoccupation with delimiting the institutional scope of markets and exchange and the application of economic analysis to the ancient economy—a necessary prerequisite for promoting the reification of status and economic embeddedness as a historically viable alternative. The significance of such a restrictive definition of economics for Finley becomes apparent when, in the same paragraph, he poses the following question: 'But what if a society was not organised for the satisfaction of its material wants by "an enormous conglomeration of interdependent markets"'? To which he immediately provides the answer: 'It would then not be possible to discover or formulate laws of economic behaviour, without which a concept of "the economy" is unlikely to develop, economic analysis (would be) impossible.'[91]

He was particularly exercised by the uncritical acceptance of the veracity and accuracy of ancient sources in modern scholarship, 'the widespread sentiment that anything written in Greek or Latin is somehow privileged, exempt from the normal canons of evaluation.'[92] The modern view that archaeological finds are inherently more objective than literary sources in determining aspects of the ancient economy was considered by him to be naïve. Fellow classicists were criticised for an over-reliance on 'facts' which in many instances were the subject of much scholarly dispute. He considered this preoccupation with the facts to have been detrimental to the process of interpretation in ancient history. For Finley, the 'facts' rarely spoke for themselves: or as he phrased it, 'the evidence propounds no questions … the historian himself does that (through) the construction of hypotheses and explanatory models.'[93]

Finley was an ardent advocate of the use of models and the incorporation of social science methodologies into ancient historiography. However, his advocacy of the use of social science methods in ancient historical research was circumscribed, focusing on sociology and social anthropology to the exclusion of economics—he was not enamoured of the dismal science.[94] Likewise,

90 Finley 1985, 212 n. 16.
91 Finley 1985, 22.
92 Finley 1985, 10.
93 Finley 1985c, 6.
94 Morley 1998, 97. Morley highlights the historical failure of communications between his-

his enthusiasm for the expansion of ancient historical analytical horizons did not entail statistical analysis or any form of cliometrics. He was particularly critical of attempts by economic and demographic historians to employ statistical techniques as, in his view, this gave a credence to ancient numbers far beyond what their context warranted.[95] Consonant with his keen interest in the broader themes and processes of history, there are two further aspects of Finley's advocacy of new approaches to ancient history which have a bearing on the approach taken in this book. First, he was highly critical of modern scholarship's failure to take account of the 'profits of war and their distribution'. Second, he encouraged the use of models in analysing the role of warfare in ancient societies in a non-historicist attempt to de-emphasise the individual with a view to revealing more general patterns and structures.[96]

Finley advocated the abandonment of psychological approaches in determining the motivations of political and military leaders or a population's intentions in going to war, referring to them as 'massive guessing games.'[97] He was highly critical of modern scholarship's treatment of ancient warfare in two respects: first, it offered an insufficient analysis of the causes of war and second, it failed to take account of the 'profits of war and their distribution.' As a corollary of his argument against the uncritical use of ancient sources, he advocated the 'careful and judicious use of explanatory models … (without which) the thin and unreliable evidence lends itself to manipulation in all directions, without any controls.'[98] Finley was adamant that both material and literary evidence were essentially reliant upon 'the conceptual framework from which the historian works.'[99] As an antidote to what he perceived to be the defects in existing scholarship with respect to its treatment of warfare, he suggests 'that it is possible to construct a number of models of ancient warfare', believing that such an approach 'should advance our understanding further than any study has achieved hitherto.'[100] Though he is unlikely to have approved of either its methodology or many of its conclusions, the approach taken in this book is a direct response to Finley's appeal for new analytical models.

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torians and economists, and referring to Finley's *The Ancient Economy*, comments: 'after all, the most influential modern school of thought on the ancient economy ostentatiously repudiated all economic theory as being unhelpful and even pernicious.'

95 This topic is discussed more extensively in Appendix: Sources.

96 Finley 1985c, 67–87.

97 Finley 1985c, 85.

98 Finley 1985c, 18.

99 Finley 1985c, 26.

100 Finley 1985c, 78,80. At the same time, regarding estimating the costs of ancient warfare, Finley argues that a strict cliometric analysis is 'out of the question'.

2 The Ancient Economy Post-Finley

As confirmation of Croce's aphorism quoted earlier that, 'All history is contemporary history', this preoccupation by both primitivists and modernists with the economic performance of the ancient economy coincided with the international economic effervescence of the decades leading up to the First World War during which economic output and international trade soared. By the 1930s the Western economic world was on its knees as the Great Depression saw trade barriers proliferate and market failure threatened systemic collapse. There were serious questions as to the capacity of the structures of capitalism to survive the cataclysm. Instigated by Polanyi and promulgated by Finley, this resulted in virtually a total emphasis on structure in the academic treatment of the ancient economy. By the 1980s, as a major process of globalisation and growth got underway, the pendulum of the ancient economy debate began to swing increasingly back towards performance again with the Finleyan model coming under increasing scrutiny. Alternating with pendular regularity, the focus of the debate on the ancient economy switched between performance and structure, broadly reflecting prevailing modern economic preoccupations. Noting this correspondence and echoing Croce, the editors of *The Cambridge Economic History of the Greco-Roman World*, comment 'Each generation gets the ancient history it deserves.'[101]

There are many reasons why the oikos debate has, in the words of one commentator, ended up in a 'conceptual rut',[102] but chief among them are the following. First, for considerable periods the debate focused predominantly on either structure or performance to the virtual exclusion of the other, which resulted in the protagonists talking past each other for much of the time. Second, a false antinomy was posited between *homo politicus* and *homo economicus* in which the primary behavioural motivations were considered to be either status-seeking or profit maximisation. Third, neoclassical economics as a tool for historical analysis has inherent limitations—limitations which apply to modern economies as much as to ancient ones.

It was the inventive genius of the 18th century Scottish Enlightenment that developed the critical insight of the role of spontaneous order mechanisms in providing public and private 'good' without the intervention of any central authority. It is one of the stunning achievements of Western intellectual history.[103] The perspicacity of these Scottish theorists laid the foundations of

101 Scheidel et al. 2007, 5.
102 Saller 2005, 223.
103 Myhrman, Weingast 1994, 185.

modern economic analysis. The concept was famously encapsulated by Adam Smith: 'It is not from the benevolence of the butcher, brewer, or the baker that we expect our dinner, but from their regard to their own interest.'[104] It was a precocious recognition of the complexity of the economy, an institution neither designed nor controlled by anyone—yet one through which the autonomous behaviour of individuals results in unintended positive consequences for society at large. Elsewhere in the same book Smith says that an individual 'intends only his own gain; and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention.'[105] Following Smith, modern or neoclassical economics is based on the view that the economy is best explained in terms of decisions made by people acting individually in the pursuit of their own interests. It was Smith who, in line with the anti-authoritarian rationalism of his age, placed methodological individualism at the heart of economic theory—where it remains to this day. The reductionist nature of neoclassical economics permits just one exogenous variable—the psychological disposition of the individual.[106]

Building on Smith's classical foundations, over the following century modern neoclassical economics became increasingly mathematical—partly in an attempt to substantiate its claimed status as a science. There were enormous benefits in this transformation, in particular, the development of microeconomic theory, a powerful tool for analysing equilibrium conditions and outcomes.[107] Its unique contribution became an ability to analyse economic phenomena at a point in time. But these important benefits were accompanied by some significant costs. With the constant invocation of *ceteris paribus* important variables such as the effects of institutions on economic outcomes were assumed away. Above all, by losing the critical dimension of time, economics became an ahistorical discipline concerned with economic *outcomes* to the detriment of analysing the *processes* of historical economic change.

With the addition of economic rationality and other elements to Smith's behavioural assumption of economic self-interest there emerged a new neoclassical sub-species—*homo economicus*. This utility-maximising agent whose calculations are conducted in a secure and static world of perfect market knowledge is the synthetic creation of modern neoclassical economics. With its canonical behavioural assumptions, preferences and rational choices, *homo economicus* has been an invaluable construct for the development of mathe-

104 Smith 2007, 10.
105 Smith 2007, 293.
106 Boland 2003, 30–33.
107 Snooks 1993, 1.

matically precise and abstract models in economic theory—as a reflection of the actual real-world behavioural impulses of human beings, it remains a caricature.[108] The rarefied world it inhabits, though ideally amenable to short-run theoretical analysis, is wholly inadequate when it comes to the more empirically grounded, long-run discipline of economic history. As the embodiment of neoclassical behavioural assumptions, the usefulness of *homo economicus* in the analysis of the process of change in real-world economies, ancient or modern, is of dubious analytical value.

In recent decades, in an effort to move beyond the well-rehearsed controversies of the polarised oikos debate, a post-structuralist literary approach to the ancient economy has emerged, inspired variously by the academic trends of Marxism, structuralism, post-structuralism, and deconstructionism. Abjuring the conceptual trappings of both the primitivists/modernists and the substantivists/formalists, this school posits an overarching post-modern theory in which all historical categories, including economic ones, are considered to be cultural constructions—'the discursive structure of our text (literary and visual) *are* the "facts", at issue.'[109] From a detailed analysis of the extant literary sources, and privileging language and ideology as cultural determinants, they have concluded that, for instance, the emergence and spread of coinage in Greece, the first society in history to be extensively monetised, was a culturally derived outcome based on the construction of identities in a process of elite self-fashioning.[110] In effect, they seek to undermine the functional legitimacy of coinage in market exchange, privileging instead its symbolic role within ideological contestations for power.[111] For them even the motivational drivers of economic actors are culturally derived. Viewed through this cultural/linguistic lens, an analysis of ancient literary sources (themselves accidents of survival written by and for an elite) reveals a struggle for power between the aristocratic elite and the emerging forces of the democratic polis.

According to Ian Morris this 'new historicist' school has had a major impact on Greek studies, and while eschewing Marxist economic determinism, it has inherited the traditional Marxist objective of undermining bourgeois social relations.[112] A further and much more contentious carry-over from Marxism is the new historicists' denial that material scarcity was a feature of primitive societies, arguing, like Marx, that a bountiful nature provided the basis for a

108 Snooks 1996, 163.
109 Kurke 1999, 23.
110 Cartledge 2001,15.
111 Kim 2001, 44–45.
112 Morris 2007, 16.

type of primitive communism. Hence, they claim that the very notion of material scarcity, a *sine qua non* of economic science, is an ideological construct which should not be taken as a given.[113] This type of post-structuralist literary approach has been described by T.K. Rabb as 'a flight from materialism', adding, 'it is almost as if there were a shrinking from the physical world … (an) uneasiness with the material conditions of life that until recently seemed so compelling'.[114] This tendency for empiricist historiography to be replaced by intellectual-cultural studies has accelerated in the intervening years with the 'widespread, if premature, discrediting of materialist historiography of any kind and an avoidance of pure (or mere) economic history.'[115] It would appear that the new historicists, having flogged one methodological horse to death, have acquired an even more sickly beast on which they are enthusiastically riding for yet another fall.

There is one further methodological option which, unfortunately, is denied to the ancient economy. One of the most common methodologies used in economic history, for modern economies, is cliometric or statistical analysis. It is not an option available for the analysis of ancient economies such as classical Athens as the primary literary sources are, effectively, a statistics-free zone. An absence noted by one of the foremost demographers of ancient Greece, M. Hansen, who in bemoaning the non-existence of a 'Statistical Yearbook of Athens and Attika 323 BC' adds, somewhat forlornly; 'I would happily sacrifice a tragedy of Euripides—not one of the best of course—if, instead, we could get access to the data to be found in a statistical yearbook.'[116]

Like Caesar's Gaul, current approaches to the ancient economy can be divided into three parts: a culturalist/anthropologist one promoted by Finley and the primitivist/substantivists; a conventional economic one promulgated by the modernists/formalists; and, more recently, a post-structuralist literary approach in which economic categories are viewed as cultural constructions. While these approaches offer a variety of interesting perspectives on the ancient economy, each suffers from at least one fatal flaw which undermines its essential validity: status, time and cultural determinism, respectively. So how can ancient economic history advance beyond its currently circumscribed analytical confines? We need a new approach and new perspectives if ancient scholarship is to extricate itself finally from the epistemological hiatus that has been the legacy of the oikos debate.

113 Morris 2007, 20.
114 Rabb 1982, 321.
115 Cartledge 2002, 12.
116 Hansen 2006b, 19.

CHAPTER 2

New Perspectives

1 Institutions—the Engines of History

As the editors of the *Cambridge Economic History of the Greco-Roman World* point out, 'The cultural achievements of classical Mediterranean civilisation rested on a remarkable economic effervescence'; a fact that poses important challenges for historians of the ancient economy. These include: finding 'ways to document performance more accurately' and to clarify 'the relationships between structures and performance'.[1] As part of his definition of the objective of economic history (quoted above), North explained what he meant by performance as being 'how much is produced, the distribution of costs and benefits, or the stability of production'. By structure he means the aspects of society that determine performance including 'the political and economic institutions, technology, demography, and ideology of society.'[2]

The task of economic history, at least at a macro-level, is to gain a fuller understanding of the long-run processes that underlie economic change. Modern economics is a trade-off between mathematical precision and time: hence the process of economic change over time is effectively beyond its remit. To rectify this mis-match between economic theory and economic reality and make economics amenable to the analysis of the long-run dynamic processes of economic history, economics needs to recover its lost dimension—time. The neoclassical model requires significant augmentation for it to become an effective tool for analysing change in the real world. It is precisely the kind of elaboration contained in a new branch of economics, New Institutional Economics (NIE), which succeeds in enhancing the scope of economic enquiry without throwing the economic baby out with the methodological bathwater.

As used here, the conceptual methodology of new institutional economics seeks to understand the emergence, persistence and evolution of significant institutions within classical Athens, as well the dynamics of their interrelationships. The exegetical importance of this analytical approach is underlined by the fact that it is through institutions that the present and future of a society are connected to its past. This explanatory framework is derived principally from

1 Scheidel et al. 2007, 7.
2 North 1981, 3.

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the work of Douglass North, who has defined institutions as 'the rules of the game in a society … the humanly devised constraints that shape human interaction … Institutional change shapes the way societies evolve through time and hence is the key to understanding historical change.'[3] As to the limitations of the standard neoclassical model in addressing historical processes, North is unequivocal, 'for an economic historian, time has always been something that is fundamentally disturbing because there is no time in neoclassical theory. The neoclassical model is a model of an instant in time, and it does not therefore take into account what time does …'[4] That the benefit of this new institutional perspective is not a one-way street favouring economic history is highlighted by one of the foremost modern theoreticians of growth theory, Robert Solow: 'Economic theory can only gain from being taught something about the range of possibilities in human societies. Few things should be more interesting to a civilized economic theorist than the opportunity to observe the interplay between social institutions and economic behaviour over time and place.'[5]

Given the significance of institutions for the analysis of the society and economy of classical Athens in the approach of this book, it is important to provide a definition of institutions that is pertinent to the phenomena being analysed without over-burdening the conceptual framework. In analysing economic growth in classical Athens, the institutional definition must address the proximate factors leading to economic growth in addition to the ultimate causes which gave rise to the process in the first instance. For the purposes of this analysis therefore, institutions are defined as structures incorporating formal or informal norms, beliefs and expectations that facilitate some transactions, and make others difficult or costly and, in the process, shape the behaviour of economic agents. The absence of reliable expectations engendered by institutions regarding the likely outcomes of behaviour increases uncertainty in relation to, for instance, trade arrangements which increases transaction costs and, in extreme cases, severely impedes market exchange. On the other hand, well-understood 'rules of the game' establish the parameters for human interaction and permit a certain predictability in how others will react in specific contexts, thus helping to reduce transaction costs. In economic terms, by making behaviour more predictable, efficient institutions can have a very positive effect on economic growth. North's new institutional theory was premised on a simple insight: efficient institutions give rise to wealth.

3 North 1990, 3.
4 North 1999, 316.
5 Solow 1985, 329.

Unlike the standard neoclassical model, which is static, the institutional analysis employed here is dynamic and so is especially appropriate for analysing the processes of change in economic history. It has an important diachronic aspect in which precipitating conditions can be seen to have on-going determining effects long after the critical conjuncture that gave rise to them has disappeared. It accepts that randomness is an integral aspect of historical outcomes in which both large and small events can have important consequences. Put simply, institutional analysis re-emphasises the notion that 'history matters' and provides an explanatory framework which designates institutions as the engines of history.

Adam Smith and many of his classical followers had a keen interest in how institutions affected economic performance. But the lean logic of modern neoclassical economics has largely relegated the consideration of how institutions and institutional development impact upon the process of economic change. The re-integration of institutions into a coherent theory of the determinants of economic performance requires revision of the austere assumptions regarding human behaviour contained in the standard neoclassical model. Much of the criticism levelled at the standard model revolves around its failure to take adequate account of important variables that define the structure of human action. A more general criticism is that it fails to consider human rationality as a social and cultural phenomenon.

In pursuit of their self-interested objectives economic agents, either individually or collectively, sometimes modify existing institutions or develop new ones. But because modern economics treats institutions as given and beyond its purview, it can offer no explanation for the development or evolution of institutions. On occasions, this can place economists in a bit of a quandary: institutional arrangements which have a direct bearing on the functioning of, for example, markets are considered outside the scope of market analysis. It was to cater for difficulties such as this that Douglass North went beyond the confines of the standard model and developed a set of analytical tools which incorporated institutions as fundamental to our understanding of the process of economic change.[6] In this respect, the principal contribution that North has made is the formulation of a theoretical framework that is better equipped to deal with economic historical analysis.

Institutional structures do not just affect individual behaviour, they are also of critical importance for collective decision-making. Thus, for Hayek and the Austrian tradition of institutional analysis, behaviour is a regular pat-

6 Myhrman, Weingast 1994, 188.

tern that is determined by causes other than simple informed rationality. This school of thought emphasises the fact that economic activity and behaviour are structured within a broader cultural context that has a significant influence on human actions. For the Austrian institutionalists—*pace* the neoclassical economists—institutions define and form rational behaviour: this is not a 'thought out' process at the individual level, but rather an intuitive response formed by context and convention. In instances of economic transactions where there is a collective interest in controlling, or channelling self-interested behaviour along lines which contribute to a greater collective good, the emergence of such institutions can be a boon for economic development, and consequently, of enormous interest to ancient economic historians. In classical Athens, the evolving nature of the institution of trierarchy is of central significance in this respect and will be analysed extensively later, in Chapter 7.

2 Materialist Man and His Motivations

Central to the behavioural science of economics is the issue of human motivation. There are many definitions of economics,[7] but one of the most succinct is that of Lionel Robbins: 'Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses.'[8] The most salient aspects of many definitions is their focus on the motivational drivers of human behaviour in the context of unlimited desires set against limited material resources with which they can be satisfied. From the earlier analysis of the oikos debate, it will be clear that when stripped of their extraneous elements, the essential underlying difference between the various approaches to the ancient economy comes down to what each considers to be the primary motivation for human behaviour in economic matters. Against Smith's notion of self-interest are ranged a number of alternatives from status-seeking to altruism and much else in between. If we are to avoid further epistemological confusion, it is essential to clarify where on this motivational continuum this book stands and why.

7 Marshall A. 1920 8th ed., 6. One of the pioneers of neoclassical economics, Alfred Marshall, defined Economics as 'a science which studies human behaviour in ordinary business of life, it examines that part of individual action which is most closely connected with the attainment and with the use of material requisite of well-being.' A more recent formulation by Nobel Laureate Paul A. Samuelson defines economics as 'a study of how people and society end up choosing with or without the use of money, to employ scarce productive resources that could have alternate uses.' Samuelson P.A. 1976. 3.

8 Robbins 1932, 15.

A century and a half ago we came to have a clear understanding of the mechanism through which life on earth has evolved and, despite enormous efforts to provide persuasive alternatives, the evolution through natural selection theory of Charles Darwin remains the preeminent explanation. As a coherent explanation of the origin and evolution of organisms (including humans) which has been amply tested and verified in both lab and field, it has stood the test of time.[9] For Darwin, the essential driving force of evolution in this 'struggle for existence' was an intense competition for survival both within species and between species against a background of a hostile and changing physical environment.[10] The ultimate victor in this struggle, *Homo sapiens* and its descendants, are still driven by the same intense desire to gain control over scarce resources and thereby increase their material well-being. It is this human motivation to maximise the probability of survival and material advantage that provides the dynamic force for economic change in human society in a process whose principal agent is 'materialist man who persistently and ingeniously plans to maximise his material advantage *over his lifetime*'[11] (italics in original).

There are long-established religious, intellectual and political traditions which are offended by this materialist characterisation and privilege a more uplifting conception of human nature in which intellectual, cultural and spiritual aspirations predominate, and within which altruism trumps self-interest. There is, however, a major difficulty with this benign depiction: which is more likely to have driven our species from relative insignificance to becoming the overwhelmingly dominant and destructive force we are today, altruism and a desire to help others, or material self-interest? Or as Steven Pinker describes it, 'Survival machines that can elbow their competitors away from finite resources like food, water, and desirable territory will out-reproduce those competitors, leaving the world with the survival machines that are best suited for such competition.'[12]

The materialist conception of human nature I employ does not, of course, preclude altruistic or cooperative behaviour; such motivations are not incompatible with the overall pursuit of long-term material self-interest. Indeed, some of the confusion in this debate arises from the inappropriate use of the words 'selfish' and 'self-interest' which are often used interchangeably. However, 'selfishness' is a pathological form of behaviour involving the pursuit

9 Pinker 2011, 38.
10 Darwin 1979 [1859].
11 Snooks 1996, 4.
12 Pinker 2011, 40.

of self-interest to an irrational degree. Similarly, altruistic and cooperative behaviour are simply other means of pursuing the same end—maximisation of individual long-run material well-being. This process, in which decision-makers, individually and collectively, pursue a variety of strategies to achieve their objectives, is not a deterministic one resulting in historically inevitable outcomes. Nor, for that matter, are survival and the pursuit of material advantage the *sole* motivation for human behaviour or pursued by everyone all the time: it is however the dominant driver for most people for most of the time, either consciously or unconsciously, and hence the dominant force for economic change in human society. With apologies to Lincoln, altruism can be pursued by all the people some of the time, some of the people all of the time, but definitely not by all of the people all of the time—as a species, we would have become extinct in the African savannah otherwise.[13]

3 The Only Constant is Change[14]

As one of its principal objectives, this book seeks to analyse the Athenian naval transformation and explain its political and economic ramifications: it has a critical focus on change rather than continuity. The speed with which Athens transformed itself into a military and economic power-house, in only a few decades, was unprecedented in the ancient world and has received insufficient scholarly scrutiny. Furthermore, the very foundation upon which this transformation was built, a dynamic strategy of conquest pursued in a systematic manner with a view to enhancing its material wealth, has not been used as an explicit basis of economic analysis of the ancient economy.

There are several reasons for this. One of the most egregious has been the seemingly never-ending oikos debate which has polarised scholarly analysis of the ancient economy and retarded its historiography for generations. The 'debate', at this stage little more than a continuous re-statement of entrenched positions, has become a force-field from which new approaches and least of all, new methodologies, have little prospect of emerging. The other main reason is that neoclassical economics does not consider the use of violence, either for the protection or coercion of competitors, as a valid form of economic activity suit-

13 Though well beyond the scope of our present endeavours, the evolution of altruism and self-interest is the subject of an intense debate within the fast-developing discipline of Evolutionary Psychology.

14 Version of Heraclitus statement quoted by Plato in Cratylus; 'all things move and nothing remains still' (τὰ ὄντα ἰέναι τε πάντα καὶ μένειν οὐδέν) (Pl. Crat. 401d, 402a)

able for analysis in terms of efficiency or profitability. Hence the role of warfare in the establishment of new markets and new networks of trade has not been analysed as an economic phenomenon.[15] The third principal reason also relates to neoclassical economics, one of whose central precepts is the so-called 'rationality hypothesis', whereby individuals always seek to maximise their utility. With its unique focus of a short-run static analysis of equilibria outcomes, economics has little to say about long-run dynamic processes, an essential aspect of economic history.

As a fundamental part of the systematic explanation for both economic and wider societal change employed in my analysis, institutional and organisation structures are reflective of the underlying dynamic materialist mechanism and so adapt and modify in response to the needs of this underlying process of economic change: in the case of institutions for example, by reducing transaction costs. All the time, the primary driving mechanism is the dynamic role of human beings acting as innovative decision-makers in their struggle for survival and material advantage. In this context, materialist man is the dynamic version of *homo economicus*. Many intellectuals find the notion that human beings, like other animals, are driven by desires rather than by lofty ideals to be totally unacceptable and so regard history as the product of noble instincts rather than base desires. Not surprisingly, many historians consider mankind's primary motivations to be intellectual, cultural and spiritual rather than materialistic and so privilege political, cultural and social events and processes. In this conception, ruling elites seek to maximise power for its own sake rather than to use that power to maximise their material advantage. This is a form of secular hubris akin to that of many religious believers who deny the validity of evolution by natural selection, arguing that, because of our innate qualities and obvious superiority with respect to all other species, humans had to be created by a god.

4 Commerce, Conquest and Colonisation

For ancient Greece the dynamic strategies available to each polis broadly consisted of colonisation,[16] conquest, or commerce. On occasion, some of these

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15 Glete 2000, 7.

16 Osborne 1998, 269. The appropriateness of the term 'colonisation' to describe ancient Greek overseas settlements has come under increased scrutiny in recent years, with Osborne going so far as to suggest an outright ban on its use in academic discussions of the process.

strategies were used in combination.[17] In the initial Greek colonisation movement Athens was not an active participant and only adopted the colonisation strategy belatedly as a means of supporting its dominant strategy of conquest by protecting both the sources of its critical raw materials (grain and timber) and their supply routes. The more successful poleis, such as Athens, specialised in a dominant strategy and invested heavily in the necessary physical infrastructure and human capital required to implement it. As with all forms of investment this is a conscious decision to forego present consumption in the expectation of improving immediate survival prospects and increasing future material standard of living. If successful, the effect of these strategic investments is an increase in real GDP per capita.

For much of the 20th century, scholarship has considered archaic Greek colonisation to be a state-sponsored enterprise carried out either for commercial reasons by the ruling aristocratic elite seeking new markets, access to material resources like grain, metals and timber or, as a result of over-population.[18] This conception of Greek colonisation was also deeply reflective of a mercantilist ideology rooted in long-standing European imperialist traditions[19] and epitomised by Blakeway's memorable linking of trade with colonisation: 'Greek commerce with the West preceded Greek colonisation of the West. The flag followed trade.'[20] Land hunger due to population pressure still has scholarly purchase as a primary reason for Greek colonisation, but it is not without its critics.[21]

The extent to which words like colonialisation and colony have a pertinence in discussions of archaic Greek migration and overseas settlement patterns has been the subject of a robust scholarly debate over the past decade and a half and runs deeper than a semantic dispute over terminology.[22] Some have

17 Our main focus will be on Athenian late 6th, 5th and 4th century use of colonies (ἀποικίαι), and especially the uniquely Athenian institution of cleruchies (κληρουχίαι) as an integral aspect of its hegemonic conquest strategy.

18 Smith 2007 [1776], 314, 294–295. This view of colonisation has a lengthy pedigree. For Adam Smith, Greek colonisation was driven by either over-population or the quest for new resources and markets; as he termed it, 'irresistible necessity, or from clear and evident utility.' Smith denounced the mercantilist zero-sum game calculus on which colonisation was based (one regions' gain is another's loss) arguing the positive benefits of trade.

19 Angelis de. 1998, 545–546.

20 Blakeway 1933, 202.

21 Snodgrass 1980, 19. In a later paper Snodgrass 1994, modified his position somewhat, broadening the motivations to include: 'the injustices, perceived or real, personal or collective, in the distribution of land and the access to power.' For arguments against the over-population hypothesis see Tsetskhladze 2006, xxiii–lxxxiii, xxviii–xxx.

22 Malkin 2004, 342–343; Angelis de 2009, 49–54.

argued that the use of such modern terms to describe an archaic process is fundamentally anachronistic, and may significantly distort our understanding of the past.[23] As one of the instigators of this debate, Robin Osborne has roundly challenged many of the traditional approaches and themes of the historiography of archaic Greek colonisation. He has proffered a radically different hypothesis which argues that '"private enterprise" … should be envisaged as responsible also for the vast majority of eighth- and seventh-century settlements' while, in the process, arguing that 'the spectres of over-population, land shortage, and states with commercial policies' should be jettisoned.[24] In formulating and presenting his arguments, Osborne has relied heavily on archaeological evidence as an antidote to what he considers is the essentially unreliable nature of literary source evidence for archaic colonisation.[25] This article and the reaction it provoked have largely re-framed the archaic colonisation debate into two constituent components: on the one hand, causes; land hunger, resources, and markets and, on the other, organisation; state or private. This latter aspect has been aptly described as a choice between 'a kind of protocapitalist enterprise of self-starting, pioneering risk-takers and entrepreneurs as well as the castoffs of society … (and) a protoimperialist movement that established Hellenism in foreign territory (and) secured trade for the mother city'.[26]

This foundation (κτίσις) tradition of Greek colonisation is a leitmotif in the literary source evidence where a colony leader (ἀρχηγέτης) or founder (οκιστής) is chosen to organise the establishment of a settlement abroad, usually having sought the prior approval of the Oracle at Delphi. This characterises colonisation as a single act planned in advance by a polis-appointed or approved leader charged with the task of implementation, including the establishment of cults which would link colony with mother-city.[27] According to Osborne, the archaeological evidence does not support this single foundation event conception of colonisation as portrayed by the literary sources but, instead, suggests it was more of an improvised process comprising of discrete events taking place over several stages.[28]

23 Van Dommelen 2012, 396.
24 Osborne 1998, 268.
25 Osborne's scepticism with respect to written source reliability has found support amongst other scholars: Wilson 2006; Hall 2007, 115. But Osborne's disavowal of literary sources for colonisation has been criticised by Malkin 2002, 195–224.
26 Antonaccio 2007, 201.
27 Snodgrass 1994, 9.
28 Osborne 1998, 252–260.

While the debate on the precise nature of archaic Greek colonisations continues apace,[29] the situation with respect to colonisation[30] for the period of primary interest here, classical Athens, is much more clear-cut; at least in terms of organisation 'which is universally considered to have been state-guided.'[31] It is also now widely accepted, despite widespread ongoing usage, that as descriptors of archaic Greek migration processes, the word 'colony' along with its cognates are largely misnomers: 'to describe most instances of ancient Greek "colonization" as colonialism *sensu stricto* is false.'[32] Osborne's plea for an outright ban has clearly not succeeded to date, and it remains to be seen if de Angelis' alternative neologistic solution, replacing the words 'colony', 'colonialism' and 'colonisation' with 'apoikia', 'apoikism' and 'apoikiazation', will fare any better.[33] However, in the context of our more chronologically focused interests, as a description of what took place under the aegis of Athens during the 5th and 4th centuries the term colonisation still has much to recommend it, especially for the particular Athenian institution of cleruchy which will be discussed in more detail later in Chapter 7.

5 The Malthusian Trap and Economic Efflorescences

To better understand the rationale of the Athenians in opting for a dynamic strategy of conquest we must briefly review the economic context. The premodern world up to the Industrial Revolution was caught in a Malthusian trap in which all long-term productivity growth was absorbed by population increases. As the original prophet of economic doom, Malthus' lean logic was simply a question of numbers. In a society where land as the principal factor of production was fixed, then as the population grew and more labour was applied to the fixed amount of land the marginal returns to labour declined. As the ratio of land to labour declined, productivity decreased and incomes fell to subsistence levels and below, leading to famine and mass starvation. Because of this

29 Purcell 2005, 115. Purcell describes the current state of the colonisation debate as being in a state of crisis. For a summary of the debate see Owen 2005.

30 Whitley 2001, 125. Though Osborne has argued for the abandonment of the term 'colonisation', its widespread use in scholarship continues, probably on the not unreasonable basis suggested by Whitley: '… we have to call this process something, and colonization is as good a term as any.' For a discussion of the debate on issues surrounding the appropriateness of the term 'colonisation' to ancient Greece see Angelis de 2010.

31 Morakis 2011, 486.

32 Angelis de. 2010, 20.

33 Angelis de. 2010, 20–21.

increased rate of mortality, population declined and incomes increased again above subsistence, and so the process continued—the Malthusian trap.

The only effective way to exit this deadly cycle was the adoption of a dynamic strategy which made output dependent on non-fixed factors such as, for instance, technological innovation. However, to escape this Malthusian trap technological innovation (as a dominant dynamic strategy) was not an option for pre-modern societies like ancient Greece. With pre-modern technology rates averaging just 0.1% annually and potential annual population increases as high as 2–3%, this was an Aesopian turtle and hare race in which the economic benefits of technological advances in pre-modern societies were always undermined by population expansion.[34] In a Malthusian world, the effective determinants of income levels are therefore mortality and fertility rates where a high mortality rate was good news for those who survived as their incomes increased. For example, the Black Death (1350 AD) caused European incomes to surge in its aftermath, reaching levels that were not seen again until the 19th century.[35] For much of world history prior to the Industrial Revolution the Malthusian paradigm prevailed. In such societies, their economies were circumscribed by an endless process of higher incomes leading to population growth which in time reduced incomes.[36]

In archaic Greece land was the single most important source of wealth and as food was its most important product, food production and consumption were critical aspects of the ancient economy.[37] As inveterate cereal eaters, the Greek diet comprised 70% cereals with meat coming a very poor second.[38] Despite overblown claims by the primitivists as to Mediterranean homogeneity with respect to climate and crops, only cereals (mainly wheat and barley) had a pervasive presence while vine and olive cultivation varied considerably, depending on climate and soil. To this Mediterranean triad there is a compelling case, according to Garnsey, to add dry legumes and pulses.[39] Because of the precarious nature of agricultural production, risk-averse farmers produced a diverse range of products rather than specialise in a small number of cash crops. This did not mean that they were averse to profit-seeking or were non-profit maximisers per se. Rather, recognising the fragility of agricultural production and the ever present risk of crop failure, farmers, out of calculated

34 Voigtländer 2013, 171.
35 Voigtländer 2013, 169.
36 Clark, 2007, 123–124; 166–167.
37 Garnsey 1999, 23.
38 Garnsey 1999, 13–19.
39 Garnsey 1988, 53–54.

self-interest, chose crop diversification as a rational survival strategy—'it is quite implausible to suggest that small landowners operating close to the level of subsistence did not make careful calculation as to how to use their limited resources of land to best advantage.'[40] As crop failure at both local and regional levels posed a constant threat, grain supply was a perennial preoccupation of the political system if regular food crises were not to degenerate into full-blown famines. To mitigate the effects of these fluctuations in food supply, materialist man in both archaic and classical Greece devised a number of risk-buffering mechanisms. First, individual farmers adopted techniques such as crop diversification and inter-cropping.[41] Second, at the societal level, classical Athens developed a coherent framework of institutions designed to deal with these long-term societal vulnerabilities to subsistence risk.[42]

In circumstances where any resource surpluses beyond the maintenance of subsistence consumption were absorbed by population growth, the ability to generate social surplus or economic growth was extremely circumscribed. A dynamic strategy of technology was not an option for the Greek poleis to overcome this Malthusian stagnation, even temporarily. The strategic choices available to cut the Gordian knot that positively correlated income and population size consisted of conquest, commerce or colonisation. Given the Malthusian constraints of the ancient Greek world and its relative success in smoothing out food supply fluctuations, many poleis, somewhat paradoxically, had to deal with a potentially explosive consequence of this success—over-population. In these circumstances, many poleis opted for colonisation as a means of defusing an incipient population crisis.[43] In late archaic Greece and classical Athens, polis and chora were closely integrated and when the city outgrew the carrying capacity of its agricultural hinterland, 'colonisation was the default remedy (whose) primary objective was to defuse a potential political and economic crisis due to overpopulation'.[44]

In positing a crude binary growth/no growth scenario for the economy of ancient Greece the oikos debate failed to appreciate the inherently dynamic nature of classical Athens. Primitivism's abiding belief that the classical world was an economically stagnant agrarian society in which a predatory aristocratic

40 Garnsey 1999, 27.
41 Theophrastos, *Enquiry into Plants*, VIII, pt. 1, 1–3.
42 Gallant 1989, 406.
43 As discussed above, over-population as an explanation for Greek colonisation has gone out of academic fashion recently. But in a society at or near subsistence even two consecutive crop-failures resulted in 'over-population' so it must be considered at least part of the explanatory mix.
44 Garnsey 1999, 23.

elite dissipated all economic surplus and so made capital accumulation, investment and growth impossible, is simply wrong, and egregiously so in the case of classical Athens. The presumed dilettantism of the Athenian elite which, if it ever existed, was clearly of such a desultory, inefficient, and amateurish nature as to be economically inconsequential. On the other hand, the modernists' insistence on the presence of economic growth is correct, although they are right for the wrong reasons. Athenian growth and prosperity were not founded on a dynamic strategy of technological innovation as modern growth is; it had a very different underlying dynamic. In many pre-industrial societies there were increases in per capita income (i.e. GDP) from time to time, but these fluctuations apart, there was no consistently upward trend. Only with the adoption of the dynamic strategy of technological innovation from the Industrial Revolution onwards was there *sustained* economic growth.[45] Prior to the Industrial Revolution the adoption of dynamic strategies of conquest, commerce and colonisation could result in what Jack Goldstone refers to as an economic 'efflorescence',[46] a sudden burst of economic activity and creative innovation that 'temporarily enabled gains in output to outpace increases in population size, thereby engendering intensive growth.'[47]

After over 100 years of inconclusive stalemate, both sides of the oikos debate, for different reasons, continue to perpetuate outdated and inaccurate perceptions of the ancient economy. In particular, the binary choice between premodern stagnation or modern growth is no longer tenable as there is increasing evidence for both per capita and total income growth in many ancient societies. These 'efflorescences' are defined as 'a relatively sharp, often unexpected upturn in significant demographic and economic indices, usually accompanied by political expansion and institution building and cultural synthesis and consolidation … they often set new patterns for thought, political organization, and economic life that last for many generations.'[48] It is important to note that, while these efflorescences reflected increased economic, political and cultural specialisation and complexity, including considerable population and economic growth, they were episodic, non-self-sustaining or accelerating forms of growth. After a period, sometimes lasting several generations, decline

45 It was the transition to energy systems based on the consumption of fossil fuels, beginning with steam and then electricity, that created the conditions for the sustained or recurring economic growth to take place. A comprehensive analysis of the economic history of growth is provided by Chiarini B. et al. 2012.

46 Goldstone 2002 333–334.

47 Scheidel 2003, 136.

48 Goldstone 2002, 333.

set in usually followed by collapse because the underlying dynamic strategy became exhausted and the Malthusian constraints re-asserted themselves. This is precisely the phenomenon of economic efflorescence that we see in classical Athens from the first decades of the 5th century to the last quarter of the 4th. It is this phase, limited in duration but exceptional in terms of innovation, productivity, and economic growth that we need to explain and to do so we must analyse the underlying dynamic strategy of conquest on which it was founded.

CHAPTER 3

Warfare States

1 Path Dependence

Given the exegetical importance of path dependence as an integral part of the explanatory framework of my analysis, this section seeks to provide a summary of its essential concepts. It should be emphasised at the outset that due to both the paucity and variability of ancient historical evidence, the application of the methodology cannot perforce be as comprehensive as in the case of modern economic history. It is also worth reminding ourselves that, as indicated from the outset, path dependence is part of an emerging trend in the application of institutional economics to *extend* the analytical validity of neoclassical economics and should not be seen as an alternative or replacement methodology.

Both path dependence and lock-in are closely related concepts. Path dependence is momentum that persists over time, while lock-in suggests that the cumulative gains from an activity create a virtuous economic circle. In combination they tend to consolidate an increasing returns regime. The salience of these emergent processes for economic history has been highlighted by the former Stanford economist and population specialist, Brian Arthur, whose seminal theoretical work investigated the effects of increasing returns (positive feedback) on economies and how the amplification of small random events can give rise to a variety of outcomes: 'The argument of this paper suggests that the interpretation of economic history should be different in different returns regimes … Insignificant circumstances become magnified by positive feedbacks to "tip" the system into the actual outcome "selected". The small events of history become important.'[1]

In this methodological framework, both the initial conditions (the starting point) and random events can have significant, even determining, influences on ultimate outcomes.[2] Thus while traditional neoclassical economics, which ignores initial conditions and random events, is static and results in only a single possible outcome, complexity analysis which encompasses temporality is

1 Arthur 1989, 127. This article also provides a detailed technical presentation of these important concepts with respect to the selection and adoption of new technologies in the marketplace.

2 Two of the pioneers in this academic field are Paul David and Brian Arthur whose initial analyses are contained in the following papers: David 1985; Arthur 1989, 1990.

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dynamic and can yield multiple possible outcomes. Because of the non-linear logic of path dependence, the initial conditions are contingent and so it cannot be considered a deterministic process in which history becomes destiny. The self-reinforcing drives that lead to increasing returns have, according to Arthur, a utility calculus which indicates that institutional adaptations are governed by active decision-making processes.[3] Thus path dependence should not be considered an inexorable force in which outcomes are uniquely structured over the long term; they are modified by individual and collective agents in response to changes in exogenous conditions.

Originally developed to explain technology development and diffusion, and especially to try to explain the phenomenon whereby technologies with an inherent superiority were superseded by those that were inferior because the better ones failed to secure an initial head-start.[4] In other fields, such as ancient history, we are dealing with social patterns that are more complex and ambiguous. In these circumstances, the self-reinforcing dynamics of path dependence become embedded in individual and collective behavioural practices and patterns. Within these social contexts, path dependence can become reinforced by a number of other mechanisms, including: coordination effects, learning effects, and adaptive expectation effects.[5] The assumption that decision making, especially in ill-defined and complex situations, is carried out with perfect deductive rationality is highly questionable. More likely, heuristic mechanisms and inductive reasoning are applied, and, 'if this is true, learning and adaptations are no longer addenda to the core theory, they become central to it in problems of high complexity.'[6]

Paul Krugman, who won the Nobel Prize for Economics in 2008 for his contribution to Economic Geography, has laid particular emphasis on the role of path dependence in economic history: 'If there is one single area of economics in which path dependence is unmistakable, it is in economic geography—the location of production in space. The long shadow cast by history over location is apparent at all scales, from the smallest to the largest …'.[7] And rarely has that historical shadow been cast so long and with such profound effects as Piraeus' millennia-long association with maritime activity. The Piraeus, first

3 Sydow, Schreyögg 2009, 694.

4 Numerous examples appear in the literature: the persistence of the Qwerty keyboard though better technical solutions exist, David P. 1985; Diamond J. 1997b; Betamax and VHS, Cusumano et al 1992; nuclear power reactors, Cowan R. 1990.

5 North 1990, 94.

6 Arthur 1992, 24.

7 Krugman 1991, 80.

established as Athens' principal maritime centre during the first decade of the 5th century BC, has remained at the forefront of international maritime affairs throughout the intervening centuries, surviving the vicissitudes of European and world conflagrations and the collapse of empires including the Byzantine, Ottoman, British, and Soviet. Today, in a country otherwise considered an economic disaster zone, Piraeus stands at the centre of a Greek maritime industry worth €259bn (6.5% GDP) and employs almost 300,000 people. It is the head-quarters of the world's largest merchant navy, ranking first in the two most important categories of modern merchant vessels, tankers and bulk carriers. Even at the height of Greece's recent economic crisis, according to Lloyd's List, the Greek merchant fleet was the most valuable in the world ($113.8bn), ahead of Japan ($98.5bn) and third-placed China ($79.3bn).[8] To achieve such pre-eminence in a modern, highly competitive, globalised industry is an exceptional accomplishment, to have maintained it across two-and-a-half millennia speaks volumes about the strengths of its original institutional foundations and the potency of path dependence.

In what follows, path dependence will be used to analyse the genesis and evolution of the institutions of the political economy of Sparta and Athens to provide a foundation for a later and more extensive analysis of those of Athens. In particular, the methodology will be used to offer an explanation as to why these two poleis, despite having broadly similar profiles during the archaic period, came to have radically different trajectories from the late archaic period onwards. During the archaic period both poleis had political economies that were broadly similar: both were based on subsistence agriculture with large populations and comparatively extensive territories; both had hoplite military regimes; both had considerable maritime experience including extensive pan-Aegean naval activities;[9] and both had access to the latest naval warfare technology, the trireme. Yet, by the 5th century, one had an unrivalled hoplite military reputation and a primitive, underdeveloped, closed economy, while the other had the foremost navy in the eastern Mediterranean and a thriving market-exchange driven open economy.

Because traditional narrative histories tend to be focussed on proximate rather than ultimate historical causation, there are important and interesting questions which they largely fail to address. What, for instance, were the

8 http://www.lloydslist.com/ll/sector/ship-operations/article442257.ece. Accessed 23.1.2016.

9 Starr 2002, 33, in which he claims that Sparta had an archaic period maritime history as vigorous as that of Athens which was active on the seas to the point of launching far more impressive naval expeditions than did contemporary Athens.

similarities and differences between Athens and Sparta and what led Athens to select a naval trajectory and Sparta to continue with its hoplite tradition? Specifically, can we identify the contingent initial conditions which caused them to take very different historical development paths? Did these initial differences have significant consequences for the subsequent historical trajectories of the two largest poleis of mainland Greece? Can the differences in initial economic conditions provide a satisfactory explanatory framework for each adopting a very different military strategy? Having chosen their respective strategies, can new institutionalism and especially a path dependence analysis help explain why Sparta, having finally succeeded in establishing her naval hegemony of the Aegean at the end of the 5th century, failed to sustain it? In comparison, with her naval infrastructure destroyed, deprived of her fleet and devoid of the wherewithal to rebuild one in the short-term, Athens was able to re-establish her naval dominance within less than two decades.

Sparta's naval reputation was at its zenith under Pausanias at the end of the Persian Wars, but she failed to capitalise on her new-found prestige among the allies by assuming the leadership of Greece and creating an empire. About 75 years later, at the end of the Peloponnesian War, Sparta had arrived at a similarly propitious juncture with respect to her options for naval hegemony of the Aegean: on this occasion she seized the opportunity. Again, path dependence will be used as a way of analysing why this latter episode was a relatively short-lived affair of just three decades, after which Sparta effectively abandoned her naval ambitions and withdrew to the fastness of the Peloponnese.

In its broadest sense, path dependence posits a causal relevance between preceding and subsequent events in a temporal sequence. As described by Levi, 'Path dependence has to mean, if it is to mean anything, that once a country or region has started down a track, the costs of reversal are very high. There will be other choice points, but the entrenchments of certain institutional arrangements obstruct an easy reversal of the initial choice.'[10] In other words, prior movements in a given direction tend to generate further progression in the same direction. This is a consequence of the relative benefits of continuing with an existing policy, as against adopting any of the other available options, the costs of which increase over time. The concept is predicated on the existence of some ordering moment which triggers the emergence of a particular historical pattern which then continues to be replicated even though the original trigger event has long past. It is in this sense that the necessary conditions for explanations of current events must be sought in the past. As it

10 Levi 1997, 28.

has done in other areas of the social sciences, the application of aspects of complexity theory to the stochastic events of ancient history may provide a coherence and understanding for what may otherwise be seen as merely random events.

Path dependence arises when an initial contingent event(s) or condition(s) triggers a subsequent pattern of occurrences that are self-reinforcing, and causally connected. This sequence, though not inevitable, gives rise to a particular institutional paradigm through a stable process of reproduction. This contrasts with the more general linear explanatory model in which the order of events are not relevant and minor events cannot give rise to major ones.[11] Path dependence seeks the particularities of historical causation as against more generalised catch-all frameworks designed to provide causal explanations across multiple cases.[12] In this methodological approach, the important variable is the temporal period immediately preceding the critical juncture during which different options are available other than the one ultimately selected: this signals the commencement of the path dependent sequence. The critical juncture itself is the point at which the fateful selection decision happens—the initial conditions of the historical sequence. Essentially, it is the point at which the non-occurrence of the actual outcome was a realistic historical possibility.[13]

In the economic history literature, the logic of increasing returns has been used to explain the persistence of several potentially inefficient technologies,[14] including typewriter keyboards, automobiles, video recorders, electricity supplies, nuclear power plants, railroad gauges, pesticides, televisions, pollution control systems, and computer programming languages.[15] When employed in the context of historical analysis, however, the concept of path dependence is a dynamic process founded on 'increasing returns'.[16] It should be noted in passing that the principle of increasing returns inherent in path dependence is fundamentally at odds with neoclassical economics, which is securely anchored in a diminishing returns paradigm. This methodology thus provides the analytical foundations for exploring the presence of increasing returns processes

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11 Abbott 1988 173.

12 Mahoney 2000, 536.

13 Mahoney 2000, 538. In more technical terms, the initial conditions are stochastically related to final outcomes.

14 Increasing returns are the result of self-reinforcing positive feedback processes.

15 Arthur, 512. Some notable examples from the literature are: David 1985; David and Bunn 1988; Cowan 1990; Cowan, Gunby 1996.

16 Pierson 2000, 251.

and their causes and consequences for the political economy of poleis such as those of classical Greece. In simple terms, the significance of an institution is best understood by a fuller appreciation of how it got there.[17]

Path dependence arises from the stochastic nature of a sequential process, thus the concept is probabilistic in nature and not deterministic.[18] This expresses the essential historical contingency of path dependence which is encompassed in North's short description of the process: 'path dependence—the consequence of small events and chance circumstance can determine solutions that, once they prevail, lead one to a particular path.'[19] Here North includes the notion of contingent probabilistic events having a role in the dynamic process of institutional evolution and emphasises that, 'At every step along the way there were choices—political and economic—that provided real alternatives. Path dependence is a way to narrow conceptually the choice set and link decision making through time. It is not a story of inevitability in which the past neatly predicts the future.'[20]

This approach offers an alternative to much of current historical analysis in which, for instance, major historical outcomes are considered to be the result of concomitantly large causes. One important feature of path dependence of relevance to our historical analysis is that the cost of switching from one policy trajectory to another increases exponentially over time. A further important aspect is that initial conditions and the occurrence of formative events can have long-term historical consequences. Finally, issues of temporality can play a significant role in determining historical outcomes: in this analytical framework it is not just a question of what happens, but when it happens. While these concepts have been widely tested and authenticated within the field of economics, their application in other areas of research, such as ancient history, is novel and must be considered a 'work-in-progress'.

Traditionally, the development and persistence of institutions have been explained by reference to their purpose, but this functional approach downplays the circumstances under which they emerge and evolve. This default explanatory method is essentially teleological and fails to take account of antecedent and intermediary events in analysing institutional outcomes. Thus, this teleological approach points to the benefits which an institution bestows once it has emerged as the reason for its continuation; 'system functionality

17 Sewell 1996, 262–263.
18 David 1997, 16.
19 North 1990, 94.
20 North 1990, 98–99.

may explain the reproduction of an institution once it is created, but it does not also account for the origins of the institution.'[21]

In the context of ancient economic history, path dependence offers a possible escape from the unappealing prospect of recursively analysing the same textual sources by offering a different analytical approach which has proven its value in other academic fields. Risky as such an enterprise may be, even the prospect of the emergence of new insights with respect to old problems and debates makes it worth pursuing. The application of path dependence and related aspects of this methodology to the stochastic events of ancient history may provide, as it has done in other areas of the social sciences, a coherence and understanding for otherwise seemingly random events. As we have seen, despite the fact that the initial focus of path dependent studies has been on the persistence of products or processes which were inefficient or sub-optimal, the concept has no normative bias towards either efficiency or inefficiency, for either goods or institutions.[22] In this respect, path dependence may provide a useful corrective to tendencies towards Whig historiography and Panglossian assumptions that the processes of history invariably lead to the best of all possible outcomes.

2 The Political Economies of Athens and Sparta: a Comparative Analysis

Snodgrass has argued that there was significant population growth during the archaic period in Attica, with a similar though less dramatic case being made by Sallares.[23] Osborne, while accepting there was some population growth, denies that archaic Greece could have achieved an average annual rate of population growth as high as 4%, arguing that it would require much higher levels of life-expectancy than is normally postulated.[24] However, it is widely accepted that significant population growth did occur, which Morris believes led to a doubling of the population during the 8th century.[25] Apart from increased urbanisation as villages grew into towns, this population growth was a critical driver of greater political centralisation, resulting in the growth of the polis,

21 Mahoney 2000, 519.

22 David 1997, 16.

23 Snodgrass 1977, 10–18; Sallares 1991, 86–90, 122–126.

24 Osborne 1996, 65. As does Morris 1989, 72.

25 Morris 2005, 10; Snodgrass 2003. 15–16. Snodgrass accepts that the population had not risen 'exceptionally steeply'.

increased warfare as friction over defined borders grew, and substantial cultural innovation from the alphabet to an ideology of male political egalitarianism.[26] As more historical light is shone on the so-called Dark Age, the structure of the population has also been revised considerably. In contrast with the more traditional presentation of the structure of archaic Greek society as pyramid-shaped, recent scholarship has suggested that a more accurate description would be egg-shaped.[27]

Both geographically and demographically, Athens and Sparta were significantly distinct. Following the conquest of Messenia during the latter half of the 7th century,[28] Sparta had a land-mass of 8,400 km^2—two-fifths of the Peloponnese according to Thucydides (1.10.2). Athens (including Salamis), at 2,650 km^2, was less than one-third this size. The Eurotas valley runs south between the Taygetus and Parnon mountain ranges, while in Messenia that of the Pamisos river extends southwards to the Messenian Gulf; together they constitute one of the most fertile agricultural areas of southern Greece.[29] These alluvial valleys were the heartland of Sparta's autarkic subsistence agricultural economy. Worked by a combination of a slave agricultural labour force (the helots) and the free labour of the περίοικοι (lit. the dwellers round about), this was the economic foundation upon which Spartan political and military supremacy was constructed.[30]

Freed from any involvement in agricultural labour or trade, the Spartiate minority constituted a full-time military elite which had a monopoly of political power. This slave agricultural economy sustained what was the nearest thing to a standing army in all of Hellas.[31] Yet despite being the hegemonic military power in Greece, according to Thucydides who spent time there and 'had leisure to observe affairs more closely', Sparta was physically unimpressive (Thuc. 5.26.5). Unlike Athens, Sparta lacked any significant urban centre with temples or public buildings and was instead 'composed of villages after the old fashion of Hellas' (Thuc. 1.10.2). Its military prowess apart, Sparta in the classical period was viewed as secretive, inward looking, and intrinsically entropic.

Due to the paucity of credible evidence, demographic figures for ancient Greece amount to little more than educated best guesses. As a consequence,

26 Snodgrass1980, 15–84.
27 Rhodes 1997, 2.
28 Coldstream 2005, 154.
29 Cartledge 2002, 25.
30 Cartledge 2002, 3.
31 Kennell 2010, 40.

scholarly population estimates can vary and, in any case, should be taken as estimations. During the early 5th century the population of Laconia and Messenia is believed to have been between 200,000 and 250,000, with just 8,000 Spartiates.[32] Garnsey estimates that the population of Attica in the early part of the 5th century was somewhere between 120,000 and 150,000.[33] However, at its height immediately prior to the Peloponnesian War, the population of Attica had increased to somewhere between 200,000 and 250,000.

From an economic perspective, an important feature of Greek population figures lies in their significance for calculating the carrying capacity of land: put simply, how many people can the produce of the land sustain without the need to import food. There is little doubt that the agricultural capacity of Attica was unable to meet the food requirements of a burgeoning Athens and so, necessitated the importation of grain.[34] The essential questions at issue relate to quantity and chronology of these imports—when did Athens become a regular importer of grain and in what quantities? Population statistics aside, the answer to these questions is not made any easier by the absence of reliable data on critical variables such as land utilisation, yields, nutritional requirements and farming practices.[35]

A further difficulty arises from the terms within which this important debate has been framed for decades. Its focus has been resolutely on subsistence and needs, which are crude and incomplete aspects of demand. It fails to consider that demand, even for commodities such as grain, can also be driven by desire; 'price, quality and possibly even fashion could make imported grain attractive.'[36] The debate is also characterised by an implicit assumption that the need for food constitutes effective demand; it does not. Morality aside, famine stricken areas are not seen as potential bonanza markets by either farmers or food producers. And there is a further well-documented anomaly: regions experiencing severe food shortages, or even famines, continue to export food. This is likely to have occurred in Athens as Athenian landowners and grain merchants, in pursuit of profits, seemed to have had a preference for selling grain abroad.[37] Yet these deficiencies have not dampened scholarly enthusiasm for

32 Catling 2002, 209.

33 Garnsey 1988, 90; Hansen 2006b, 45; Moreno 2007, 311–312, posits a figure for citizens alone of between 120,000–150,000 in 531.

34 Garnsey 1988, 105.

35 Garnsey 1989, 89–106, contains a detailed analysis of many of these pertinent issues.

36 Braund 2007, 40.

37 Garnsey 1988, 74–75.

intense and robust engagement on what is a far from a marginal issue; one with considerable contingent economic, foreign policy and naval implications.

From the vigorous and ongoing debate regarding the agricultural carrying capacity of Attica, a consensus of sorts has emerged for an upper population range of 110,000–130,000.[38] A dissenter from this consensus is Moreno, who argues that the use of annual fallow lowered the agricultural productivity of Attica such that it could only support an upper range of 84,000.[39] In either case, as the end of the 6th century approached it is clear that agricultural self-sufficiency was beyond the capacity of Attica. As Garnsey, who has analysed this vexed question extensively, points out, 'the late sixth century or early fifth [was] the turning point. Attica was … approaching the danger zone.'[40] Yet even those who argue for a later date for routine Athenian grain imports, like Garnsey, accept that because episodic crop failures were an intrinsic feature of agricultural life in ancient Attica, imported grain was an intermittent requirement even during the late archaic period.[41] In contrast, Sparta's largely self-sufficient agricultural economy had little need for such imports: a fact that had other interesting consequences, as we shall see below.

Neither Athens nor Sparta were particularly active participants in the first great phase of Greek colonisation during the 8th and 7th centuries.[42] There were, however, late 8th century Spartan foundations at Tarentum, Siris and Locri in southern Sicily, as well as at Taras.[43] For the rest of the late archaic period, following its conquest of Messenia, Sparta was preoccupied with supressing its helot slave population and showed little appetite for foreign colonial enterprises. By this time, the attitude of both poleis with respect to extra-territorial entanglements had diverged considerably: the one became increasingly withdrawn, the other became more assertive and imperious. The late 6th century colonisation of Euboea and Salamis by Athens was driven primarily by strategic considerations, though clearly the process also made agricultural land available to Athenian citizens.[44] The 6th century 'outre-mer' Athenian colonisation efforts in the north Aegean littoral were individual initiatives rather than

38 Hansen 2006b, 43–44.
39 Moreno 2012, 3–31.
40 Garnsey 1988, 109–110, challenges previous scholarship's claim especially Ste. Croix, 1972, 46, that Athens was a large-scale importer of grain from an early stage. Yet the reality of ancient Greece was that fluctuations in grain availability due to crop failure was a regular occurrence Garnsey 1988, 3–39; Jameson 1983, 6–13.
41 Garnsey 1988, 3–39; Jameson 1983, 6–13.
42 Ober 2015, 145; Descoeudres 2008, 361–362.
43 Tsetskhladze 2006, lxiii.
44 Figueira 1991, 142–160.

state-sponsored enterprises, characterised by Figueira as 'patronal', and, more pithily, as aristocrats 'who embodied an Odyssean versatility in social comportment'.[45]

As the late archaic period progressed, further structural differences between the two poleis became evident, which had concomitant path dependence outcomes. Initially, the political structures of Sparta differed little from many other Greek poleis, but it was the Lykourgan reforms of the 7th century that marked the watershed.[46] There is a long-standing image of Sparta as the 'fountainhead of the entire western utopian tradition',[47] a militaristic, collectivist, economically egalitarian and prosperous society, a characterisation which owes much to Plutarch's depiction in his *Life of Lycurgus*.[48] The notion that this Spartan εὐνομία (good order) was the result of the actions of the 'law-giver' Lycurgus has its source in both Herodotus (1.65) and Thucydides (1.18.1). However, modern scholarship views these reforms not so much as an event instigated by one man, but as a process that unfolded from the 7th century through to the 6th century.[49] By the end of the 7th century Spartan society was undergoing considerable reorganisation out of which 'the classic pattern eventually emerged.'[50]

The extreme presentation of Sparta by ancient historians as a uniquely militarised state with an introverted society, ideologically antithetical to involvement in trade or productive economic activities, has undergone some re-evaluation in more recent scholarship.[51] While accepting Sparta's specialist military orientation, it has called into question this irredeemably militaristic portrayal.[52] Yet, Sparta's isolationist ideology, and its pathological fear of external corrupting influences, was very much in evidence and typified by the institution of ξενηλασία (expulsion of foreigners), the antithesis of Athens' reputation as a centre of cultural and intellectual cosmopolitanism.[53] The single most notable distinction between the two economies stemmed from the fact

45 Figueira 1991, 132–142.
46 Murray 1993, 161, 165–173.
47 Cartledge 1987, 415–416.
48 Hodkinson 2000, 9.
49 van Wees 1999.1–41; Luraghi 2002, 233–234.
50 Starr 1965, 257.
51 Ste. Croix 1972, 91, who described Sparta as 'a community of professional soldiers'; Finley 1986, 177. For Finley it was 'the model military state'; Hooker 1980, 141 for whom Sparta's *raison d'être* was, 'the relentless pursuit by the Spartans of the single aim of military efficiency'; Kagan 1990, 72 was equally blunt, 'Sparta was a military state'.
52 Hodkinson 1986, 2000, 2003, has been a leading proponent of this revised assessment of Sparta.
53 Figueira 2003, 44–74.

that Spartan agricultural self-sufficiency obviated the requirement to import foreign grain, especially after its annexation of Messenia. In these circumstances, Sparta was under far less pressure to engage in foreign trade to pay for food imports or to develop an internationally acceptable currency and monetise its economy (Xen. *Const. Lac.* 7; Plut. *Lyc.* 9.3). Sparta had become a largely non-monetary economy with no minted currency of its own.[54] But the suggestion that foreign currency was banned is considered extreme, impractical, and unlikely.[55] Similarly, source suggestions (Plut. *Lyc.* 9.1) that its iron currency was introduced *tout à coup* by Lycurgus, as an egalitarian replacement for a pre-existing precious metal currency, is implausible compared to the more likely explanation of it being a continuation of an older iron proto-currency.[56] There were two essential reasons why Sparta used an iron currency: first, she had a limited involvement in international market exchange[57] and second, though lacking native supplies of silver, gold or bronze, she had the largest iron deposits in Greece.[58] The choice of a base-metal currency like iron, with little or no intrinsic value, is a clear indication of the unimportance of market exchange to the political economy of Sparta. The contrast with Athens could hardly be starker.

Critical structural features of the Athenian economy became evident during the 6th century, including; extensive monetisation, an increasing propensity to trade and, just as significantly, a growing need to import grain.[59] With the carrying capacity of Attica unable to sustain its growing population, Athens was obliged to engage in extensive trade. To pay for her grain imports Athens exported both manufactured goods, most notably pottery, and agricultural products such as olive oil.[60] While Athens was a small open economy relying on

54 Hodkinson 2000, 154, 158,161.

55 Cawkwell 1983, 396, agrees with Plato who saw that 'Hellenic currency' was necessary 'for campaigns and foreign travel' (*Laws* 742a, b).

56 Hodkinson 2000, 161.

57 Hodkinson 2000, 161.

58 Einzig, 2014, 224.

59 Reed 2003, 16–18.; Morley 2007, 14, 66–68; Isager and Hansen 1975, 20–29.; Amemiya 2007, 74–75.

60 Bresson 1987, 220. Bresson shows that the Hasebroek/Finley notion of trade being confined to the import of commodities was very one-sided. Ancient sources also indicate that the market-exchange pattern of imports and exports were not only integrally associated with each other but necessarily so, as Plato's ideal city description makes clear: 'It will be next to impossible to plant our city in a territory where it will need no import. So there will have to be another set of people, to fetch what it needs from other countries. Moreover, if these agents take with them nothing that those other countries require in exchange, they will return as empty-handed as they went. So, besides everything wanted for consump-

external trade for vital sources of food and the income to pay for them, Sparta had become an economically self-sufficient economy in which the income of its elite Spartiates was derived through rent-extraction from its dependent helot labour force who worked the land on behalf of the elite.

Even in respect of its labour market, Sparta was fundamentally different from Athens, whose chattel slaves were bought and sold through the institution of commercial market exchange. In Athens, the lowest social class of citizens, the thetes, were not land holders and so earned their income as wage labourers both in the agricultural sector as well as in trade, maritime activities and manufacturing. Though not self-sufficient farmers, as wage labourers in an increasingly monetised economy, their improving economic condition was likely to have been a contributor to their incorporation in the Athenian citizen body, a process of enfranchisement that began in earnest with the reforms of Cleisthenes.[61] This was an exercise in franchise extension typically designed by elites to stave off social unrest and violent revolt, as argued by Acemoglu and Robinson.[62]

As we have noted, both Sparta and Athens experienced growing populations during the 6th century.[63] But during the 5th century Sparta, unlike Athens, experienced a reversal of this process as her population declined. The most likely cause of the dramatic decline, according to Figueira, is the great earthquake of 465/4 in which many Spartans died (Plut. *Cimon* 16.4; Diod. 11.63.1–4).[64] Based on these sources, Figueira believes that the earthquake was of sufficient magnitude to have caused an unprecedented level of mortality. Additionally, as Sparta itself suffered worse destruction than the surrounding towns and villages, the Spartiate elite was disproportionately affected. However, Cartledge argues that the catastrophic decline in the number of male Spartan citizens, from 8,000 in 480 to at most 1,500 in 371, cannot be attributed to the earthquake alone, as there would be a natural tendency for the population to recover within a few generations of such a catastrophe.[65]

tion at home, we must produce enough goods of the right kind for the foreigners whom we depend on to supply us.' (Plato, *Republic* 2.369b–371b).

61 Cavanagh 2009, 420.

62 Acemoglu, Robinson 2000, 1168.

63 Figueira 1986, 173, 177–179.

64 Figueira 1986, 178; Green 2006, 128–129, n. 235. Green suggests that based on the disparate dates given by different sources for this earthquake there may have been in fact two: one in 469 and the other in 464.

65 Cartledge 1987, 184–191; Hansen 2009, 395, makes a similar point regarding the earthquake and subsequent demographic recovery.

Nevertheless, Sparta was extremely conscious of its vulnerability with respect to manpower. Both Spartan military tactics and strategy were constantly calibrated against its critical supply of manpower. Such was the importance of demography that 'declining manpower reshaped Spartan society'.[66] The significance of demography for Sparta was recognised by Aristotle who ascribed ὀλιγανθρωπία (paucity of men) as the root cause of Sparta's decline (Arist. *Pol.* 1270a33–34). According to Herodotus, there were 8000 Spartiates in the first decades of the 5th century (Hdt. 7.234.2), a figure which fell to less than 2,000 by the first quarter of the following century.[67] According to more recent scholarship, this decline in the size of the Spartiate citizenship throughout the 5th and 4th centuries 'was surely grounded in increasing inequalities of wealth.'[68] Thus, in place of the previous depiction of an economically egalitarian and monolithic society, we have a more dichotomous one in which, behind a façade of institutional rigidity, material conditions and economic forces effected a demographic decline and a consequential societal crisis.[69]

The system of dependent labour upon which the Spartan economy was founded was therefore highly vulnerable to any disruptions resulting from shortages of male labour supply. In the face of an economic crisis due to the loss of productive capacity caused by Helot deaths in the earthquake and subsequent revolt and exiles, the Spartiate elite did not countenance a re-ordering of the political system to engender Helot cooperation; instead, reverting to form, they instigated a regime of repression in which many helots were slaughtered (Thuc. 4.80.3–5). An indication of the extent of the economic crisis can be ascertained from the fact that many Spartiates lost their citizenship through an inability to pay their mess dues (Arist. *Pol.* 1271a26–37, 1272a13–16), further increasing Spartiate apprehensions of a helot revolt (Thuc. 4.41.3, 55.1). Despite their earlier reluctance, seven years into the Peloponnesian War Sparta relented and instituted a radical political change by giving freedom and citizenship rights to Helots who fought in the army (Thuc. 5.34.1). While this may have ameliorated political tensions, it exacerbated the economic problem by reducing the rent-extraction labour base of the economy: as a solution to Spartan oliganthropy, it created as many problems as it solved. Thus the decline in the

66 Figueira 1986, 166.

67 An indication of the decline can be gauged from Xenophon who says that at the fateful battle of Leuctra (371) there were only 700 Spartiates (Xen. *Hell.* 6. 4. 15). See also Hodkinson 2000, 399–400; Cawkwell 2002, 236–250.

68 Hodkinson 2000, 104.

69 Hodkinson 2000, 104.

economically productive workforce following the natural disasters of the mid-460s was greatly accentuated by the incorporation of more helots into military service in the 420s.

In the light of this, applying a marginal economic analysis to Spartan territorial acquisition quickly reveals the inherent limitations of any Spartan conquest strategy outside its Peloponnesian bailiwick. Based on a hoplite land army, its strategic reach and ability to project power at a distance was severely restricted. Logistical difficulties involved in military actions beyond the Peloponnese carried greater risk, which increased the marginal cost of such expeditions and reduced their marginal benefit. The single most important determining factor which resulted in an early equilibrium between marginal cost and marginal benefit was the ever-present risk of a helot uprising. This is because warfare, as a rent extractive activity, is subject to increasing costs. In the case of Sparta, given its acutely pyramid-shaped population structure, by far the greatest cost revolved around Spartiate mortality risk. The relatively small size of the Spartiate elite, as compared with that of the subject population, meant that large-scale death in combat had the potential to pose an elemental risk to the state itself.

But the manpower losses due to the combined effects of a major earthquake followed by a helot revolt in 460s had fundamental social, economic and military repercussions for Spartan society.[70] These extended to the political realm thirty years later as a consequence of the Peloponnesian War. The ramifications of Sparta's 5th century demographic crisis included a radical change to the centuries' old institution of land tenure in which the state allocated plots of land to Spartiate citizens from which they received rent. The introduction of land inheritance resulted in a concentration of landed property in the hands of a small elite. But it was the challenge of military confrontation with a naval empire that caused the greatest difficulties for the rigid institutional structures of Sparta. The economic crisis brought on by the Peloponnesian War increased Spartiate disenfranchisement and reduced income due to manpower shortages, creating a greater reliance on bullion and booty—a form of wealth acquisition previously thought to have been forbidden. With its restricted monetary economy, its subsistence and autarkic agricultural sector, combined with its idiosyncratic institutional structure in which all important resource allocation decisions were political, Sparta was the primitivist non-market, embedded economy *par excellence*. Indeed, it was this very embeddedness which according to Figueira was the real source of Sparta's economic failure: 'the subjection

70 Cartledge 1979, 307–311.

of the labor supply to *political* rules of operation, rather than to an allocation of work inputs through economic factors, expressed through prices, doomed Sparta.'[71] As we will see, the institutional outcomes of these initial economic circumstances influenced the development of the Spartan navy during the critical phase from the 5th century through to the early decades of the 4th.

In the analysis that follows, what we are trying to identify are significant differences in the initial circumstances of Sparta and Athens which may explain the subsequent distinctive variance in the evolution of the institutional structures of their respective political economies. Though there is debate about the timing and extent of the demographic increase in archaic Greece, the fact of substantial population increase is widely accepted. Subsistence agriculture was the basis of both economies and the rise in population during the archaic period put pressure on the land.[72] For the first time farmland became scarce and, unsurprisingly, access to and control of this overwhelmingly critical resource became the subject of considerable conflict. In the case of Athens, the reforms of Solon in the early 6th century, known as the σεισάχθεια (the shaking off of burdens), are variously interpreted by modern scholars. However, there is general acceptance that they 'had a significant effect on the control of land in Attica'.[73] By incorporating greater numbers of Athenians into the political decision-making process the reforms also helped lay the foundations for Cleisthenes' democratic reforms of the late 6th century. In contrast, Sparta maintained a rigid system with Spartiate citizens exercising strict control over its dependent helot population, upon whom their economic survival depended. Far from extending the franchise, the restrictive nature of the Spartiate institutional system became manifest in an ever-decreasing citizenship population which threatened its very survival.

Though both economies were rooted in subsistence agriculture there were significant structural differences between Sparta and Athens. In the ensuing discussion, it should be kept in mind that Sparta was generally more fertile than Attica and that the Spartiates had control of the most fertile parts of their territory, such as the Eurotas valley.[74] An important aspect of any agricultural

71 Figueira 1986. 211.

72 Snodgrass 1980, 23. In the case of Attica, Snodgrass claims that 'between about 780 and 720 BC, the population may have multiplied itself by a factor of approximately seven'. While still arguing for population increase he modified the scale in later work.

73 Harris 1997, 55. Harris dissents from the prevailing 'control of land' consensus arguing the reform involved the suppression of stasis and the abolition of a payment protection system.

74 Hodkinson 2000, 138.

economy is the size of land-holdings. By this yardstick, the disparity between the two largest Greek poleis is very evident from a comparison of the average land-holdings. Based on modern comparisons, Gallant has argued that an average family farm of between 5 and 6 ha. in Attica produced little beyond subsistence.[75] With a total of 135,000 ha. of cultivable land available in both Laconia and Messenia for the estimated 6,500 households, the average landholding in Sparta was substantially higher at almost 21 ha., while the wealthiest elite possessed almost 45 ha. each.[76] The figures for the top cohort of wealthiest farmers of each poleis is also revealing. In Athens the average size of land-holding of the 1,200 wealthiest citizens was 18.2 ha., while the wealthiest Spartiates had an average land holding of more than double that figure at 45 ha.[77] With the proviso that such averages can conceal substantial variability within the data sets, it is interesting to note that the average farm size in Athens was one-third that of the wealthiest, while in Sparta it was about half.

The widely accepted view within existing scholarship that land in Sparta was essentially a publicly controlled asset has also been questioned. Hodkinson favours a private model of land ownership which, he suggests, was 'similar in character to elsewhere in Greece.'[78] Even accepting the views of this revisionist scholarship that Spartan land was largely private, unequal and partible, from an economic perspective the more important question is, was it alienable to the extent that it could be bought and sold freely? There is little or no evidence that Sparta had any market for land, or the lending and credit institutions to facilitate hypothecation, such as existed in Athens.[79] On the contrary, Sparta placed restrictions on private property rights and 'there were social sanctions against purchase or sale of land.'[80]

In this context, it is important to reiterate the significance which institutional analysis places on the existence of a legal framework of property rights, as a determining factor in economic growth and development.[81] The position is put forcefully by North: 'To attempt to account for the diverse historical experience of economies … without making the incentive structure derived from

75 Gallant 1991, 60–112.
76 Hodkinson 2000, 132–134.
77 Bresson 2015, 142–145. It should also be noted that about one-third (10,000) citizens had no land-holding.
78 Hodkinson 2000, 79. See especially pp. 69–90.
79 Hodkinson 2000, 84–85.
80 Hodkinson 2000, 1187.
81 Traditional scholarship has had a predominant focus on political and military aspects of the ancient world and the significance of institutional features in helping to explain the direction, shape and scale of ancient political economies has been greatly undervalued.

institutions an essential ingredient appears to me to be a sterile exercise.'[82] Property rights help to create a secure environment by stabilising expectations regarding the behaviour of others. But most significantly, for our purposes, a property rights regime provides an individual with the incentives to engage in production and exchange, secure in the knowledge that he can enjoy untrammelled rights to the fruits of his labour.[83] As is clear from the foregoing review of land tenure, from an early stage, Sparta's institutional structures with respect to property contained no economic incentives for growth. It was a 'satisficing' economy in which the two most significant types of economic agents, helots and Spartiates, were only motivated 'to deliver enough produce to enable them (Spartiates) to sustain their position as a citizen elite with a near full-time devotion to civic and military affairs.'[84] The alignment of the economic interests of both groups on the achievement of economic sufficiency, with no pressure to go beyond that, was also assisted 'by the fact that the foodstuffs in question were mainly staples required anyway by the helots for their own subsistence.'[85]

We can see therefore that in Sparta grain had a high utility value because it was essential for the material subsistence of both groups, defined somewhat differently in each case. However, it had a low market value because once demand had been satisfied there was no incentive to produce further—production beyond the requirements of existing demand would have merely depressed prices. Undoubtedly there was some market exchange, if only to even out short-term, individual or local imbalances, but there is no evidence for extensive market exchange in which large surpluses (or deficits) resulted in exports (or imports) of grain, as in Athens. All of which points to a closed, subsistence-based agricultural economy which produced little by way of significant social surplus. A characterisation reinforced by its use of a non-precious metal currency, iron, which had very limited intrinsic use-value and whose principal benefit would have been as a unit of account rather than a store of value or means of exchange to facilitate the rudimentary requirements of its primitive system of market exchange.[86] Given these features of its political

82 North 1990, 133–134.
83 Leblang 1996, 7.
84 Hodkinson 2003, 249.
85 Hodkinson 2003, 256.
86 Cawkwell 1983, 96; Cartledge 1987, 88. In a Greek world otherwise fully monetised, it would be facile to suggest that Sparta had no access to or use for precious metal currency for international purpose—it just had none of its own until it began minting in the 3rd century.

economy, it is easy to understand why, over centuries, Sparta failed to produce a social surplus of any significance, which goes a long way towards explaining Thucydides' surprise at the city's lack of temples and other public buildings and fortifications (Thuc. 1.10.2): it simply lacked the wealth to invest in expensive infrastructure projects.

So, the initial conditions which set Sparta and Athens on two very different historical trajectories centre on the agricultural sectors of their respective political economies. Following the conquest of Messenia, Sparta's more fertile and larger agricultural holdings facilitated its Spartiate elite in maintaining its dominant position as a rentier class by subjugating its dependent helot population. Self-sufficient in its primary means of material subsistence, Sparta's need to engage in international market exchange for foodstuffs like grain was minimal: Sparta was 'a largely self-sufficient regional economy.'[87] From this and its desire to maintain the status quo, Sparta evolved a particular institutional paradigm during the archaic period which comprised a formidable set of cultural values and norms that created and maintained the mechanisms that sustained its military elite in power. As path dependence is neither static nor deterministic, it facilitates bounded change within its parameters, as Sparta illustrates. Thus Sparta's institutional system was one which underwent a stable process of replication over the ensuing centuries but, when required, could accommodate modifications. In such circumstances, relative institutional stability continues until an exogenous event(s) overwhelms the system causing a radical overhaul of the institutional framework. In the case of Sparta, it was not until the latter part of the 5th century when faced with an existential threat from the Athenian naval hegemon that substantial alterations were made to fundamental aspects of its institutional structures.

In contrast, Athens, with its deficiencies in soil fertility and less optimal landholding size, adopted a different approach when confronted with a period of stasis in the early 6th century. It embraced an open trade-orientated policy, tactically utilising imports and exports as the exigencies of its political economy required. Initially banning grain exports in an effort to satisfy local demand and, eventually, as the population increased, from the late 6th century onwards Athens was obliged to engage in regular and increasingly large importations of grain. Having set out on these different courses both poleis continued with them because of another feature of path dependence in which the costs of changing from one path to another increase exponentially over time. Sparta, having committed heavily, in institutional terms, to a hoplite military system,

87 Hodkinson 2000, 188.

experienced tremendous difficulties subsequently in trying to break with this early institutional investment as it tried to transform itself from a continental into a naval hegemon.

3 The Spartan Naval Mirage

Pausanias' successful expedition to Cyprus and Byzantium (Thuc. 1.94.2) saw Sparta's military reputation at its zenith. Prior to this, and somewhat surprisingly, it was Spartan admirals who had been appointed to lead the combined Greek navies in confronting Xerxes' invasion fleet: Eurybiades at Artemisium and Salamis, and King Leotychidas at Mycale. The allied petition for Athens to assume command of the fleet from Pausanias at the end of the war is a wholly unexpected turn of events. Pausanias was forced to return to Sparta for alleged misconduct against the allies and charged with, but found not guilty of, medising (Thuc. 1.95.5).[88]

Another surprising aspect of this episode is the equanimity with which Sparta accepted this de facto transfer of the leadership of Greece to Athens. Apparently, according to Thucydides, the Spartans did not demur because they were anxious to be shut of the Persian war and were satisfied with Athenian competency for the task (Thuc. 1.95.7). This reflects an unambiguous authorial endorsement of the Athenian version of events in which the power transition happened because the Spartans 'were unwilling to prosecute to its conclusion the war against the barbarian' (Thuc. 1.75.2). Thucydides' subsequent excursus on Themistocles and Pausanias (Thuc. 1.128–138) is a contrast in profiles calculated to serve similar authorial ends: the haughty and arrogant Pausanias who caused Sparta to lose her Greek leadership role, set against the visionary genius Themistocles, whose foresight in creating the Athenian navy laid the foundations of Athenian hegemony and empire.

On this important aspect of Greek power politics Thucydides' view seems to be very much a minority one, as it conflicts 'with a disquieting amount of non-Thucydidean evidence for Spartan unease.'[89] Herodotus' view of this power transition from Sparta to Athens is far less sanguine, characterising the allies' complaints against Pausanias as merely a pretext for the Athenians to re-assert their authority over the Greek alliance (Hdt. 8.3.2). However one views the various modern and ancient interpretations of what transpired in the immediate

88 Hornblower 1991, 142. Pausanias was initially acquitted of the charge of Medising but was later found guilty, though, according to Hornblower 'it was largely a fabrication.'

89 Hornblower 1991, 143.

aftermath of the Persian defeat, there was one preponderant outcome: Spartan naval ambitions did not survive Pausanias' demise. His fall from grace during the summer of 478 put an end, for the time being at any rate, to Sparta's attempt at securing naval hegemony of the Aegean.

At the beginning of the Peloponnesian War, Sparta presided over a formidable land-based military alliance, while Athens' maritime empire had exercised dominion over the eastern Mediterranean for nigh-on 50 years. By the end of the Peloponnesian War, less than three decades later, there had been a dramatic reversal of fortunes in which Sparta had become the new maritime hegemonic power while the once indomitable Athenian navy was reduced to a mere 12 triremes. Though defeated in a major naval battle in 394, Sparta managed to preserve her naval supremacy for a further two decades. But faced with a resurgent Athens, again in receipt of substantial Persian resources, Sparta's efforts to maintain her maritime dominance were doomed.

The most salient fact with respect to this important, if short-lived, episode of Spartan naval hegemony is that it happened at all. Athens held all the maritime aces: decades' long naval experience in acquiring and building triremes; widely recognised naval expertise and tactical skills; extensive naval infrastructure of dockyards and shipsheds; and, most importantly, according to Thucydides, the financial wherewithal.[90] So how did Sparta, a naval novice, defeat the well-established and most illustrious naval power of the Mediterranean world? Thucydides' answer to this important question is simple: it did not, Athens defeated itself.[91] Giving little credit to the Spartans, Thucydides cites several reasons, which include the Sicilian disaster and Persian financial support for Sparta. But even these were insufficient in themselves to lay low the Athenians and their empire, as they did not 'finally succumb till they fell victim to their own internal disorders' (Thuc. 2.65.12).[92] Thucydides conclusions have a credible plausibility as the proximate answer to the issue of Athenian failure, but a path dependence analysis may shed additional light on this critically important period, not just for Athens, but for its principal adversary, Sparta.

As discussed above, the different initial conditions of Sparta and Athens during the archaic period set in train a sequence which culminated in each adopting radically different military strategies. By the 5th century, the essential military difference between the two poleis, and the radically contrasting outcomes

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90 Lisa Kallet-Marx 1993, provides a thorough analysis of Thucydides' insistence on the critical importance of finance to the operation of a naval empire.

91 Strauss 2009, 34.

92 Hornblower 1991, 129, 347–348. It is a recurring theme in Thucydides that the Athenians were prone to making, in modern sporting parlance, unforced errors cf. 1.85.4, 1.69.5.

that resulted, is summarised by Kallet-Marx; 'Athens' military might consisted in its navy, as Sparta's lay in an unparalleled hoplite force … (but) Athens alone achieved an *arche*.'[93] The distinctive institutional frameworks which arose to deliver these divergent strategic outcomes did not arise by chance, because, as argued by Raaflaub, 'political procedures throughout history were not invented randomly, for the sake of trying something new … but as the result of contingencies and specific historical constellations and necessities.'[94] In Sparta's case, it had a privately funded army, only occasional small-scale naval operations (depending on its allies to provide naval resources), no significant infrastructure investments and since it was 'well endowed with good agricultural land, there was no requirement for expenditure on external food supplies'. All of these factors obviated the need for either extensive taxation, or a financial administration system.[95]

Yet, when it came to a confrontation with a major naval power the institutional matrix of Sparta, wholly sufficient for delivering its hoplite strategy, was incapable of delivering a naval one. In response to new challenges, actors invariably resort to solutions from pre-existing institutional repertoires, which, in Sparta's case, served a specific hoplite purpose. Having made the institutional choices in favour of an army, these entrenched arrangements became formidable impediments to reversing the initial choices when the changed circumstances required. Powerful learning and coordination effects, as well as the adaptive expectations associated with path dependence, make such radical strategic reversals extremely difficult.[96] This is because, in a historical context, institutional path dependence creates a build-up of behavioural routines, social connections, and cognitive structures around its historically contingent institutions.[97]

It was not that Sparta was unaware of its critical naval shortcomings. Archidamus articulated the two primary difficulties facing Sparta in the impending war with Athens; the lack of an adequate fleet and the finances to pay for one, concluding; 'We neither have it in our treasury, nor are we ready to contribute it from our private funds.' (Thuc. 1.80. 4). In his desperate-times-require-desperate-measures analysis, Archidamus recognised that Sparta's critical deficiencies in naval and financial resources would have to be dealt with,

93 Kallet-Marx 1993, 5–6. This monograph provides a detailed and cogent analysis of Thucydides' core concept of the critical linkage between financial resources and naval power.

94 Raaflaub 2015, 6–7.

95 Hodkinson 2000, 187–188.

96 Arthur 1994, 112.

97 Page 2006, 89.

even if that meant accepting assistance from the Greeks' arch enemy, Persia (Thuc. 1.82).[98] Aristotle too identified the institutional and behavioural incongruities at the heart of Spartiate attitudes to the provision of public goods; 'Public finance is another thing badly managed by the Spartiates. They are obliged to undertake large wars, but there is never any money in the public treasury.' A dichotomous Spartan position which Aristotle went on to characterise as 'a state which has no money but is full of persons eager to make money for themselves.' (Arist. *Pol.* 1271b10–17).

Time and again Sparta failed to come to terms with what was required to develop or sustain a consistently effective naval force. Having failed to sharpen its naval focus during the Pentecontaetia, Sparta was ill-prepared for naval confrontations during the Peloponnesian War; such was her failure in this respect that by 425 she had conceded naval supremacy in the Aegean to Athens. Though still the object of Athenian offensive operations such as at Eion and later in the disastrous intervention in the Egyptian revolt, apart from Pissuthnes' involvement in the Samian revolt, Persia stayed aloof from Greek affairs. Having eschewed direct military involvement, it was during the Egyptian revolt, by trying to bribe Sparta to invade Attica to relieve pressure in Egypt, that Persia first deployed a new and ultimately successful tactic of replacing a military stick with a financial carrot (Thuc. 1.109.2).[99]

In the decade before and after the Peloponnesian War, there were three sources of money which became available for public expenditure in Sparta: Persia, booty and tribute. When Lysander returned to Sparta, according to Diodorus, he brought with him 'booty and with it fifteen hundred talents of silver.' (Diod. 13.106.8). If we can believe Diodorus, he also claims that 'before this time they had not used coined money, they now collected yearly from the tribute more than a thousand talents.' (Diod. 14.10.2). Having lacked the finance to create and sustain a significant navy for decades, Sparta had at last acquired substantial funding, sufficient for Lysander to boast that he had become 'master of the sea' (Xen. Hell. 1.6.2). Sparta could now pay for the best helmsmen and crews on what was an open Greek labour market for naval mercenaries.

Further evidence suggests that Sparta was taking its naval commitments more seriously than ever. But as will become clear, Sparta's escalating commitment to its new naval direction was implemented within the constraints of its hoplite-defined institutional arrangements, which underwent modifications and adaptations but not wholesale replacement. This is a classic feature

98 Lewis 1977, 61–64.
99 Hornblower 1991, 175.

of path dependence in which collectivities change and innovate in response to exogenous changes, not by escaping from institutional constraints, but by modifying the existing institutional structures.[100] A significant change in Spartan naval affairs seems to have happened in 412 when, for the first time, there is mention of a unified naval command structure with the appointment of Astyochus as navarch, who was 'henceforth invested with the supreme command at sea.' (Thuc. 8.20.1). It is also noteworthy that unlike army commanders, non-Spartiates could become navarchs: a modification of Spartan military rules that allowed some of their foremost naval commanders—Callicratidas, Gylippos and Lysander—to emerge from non-Spartiate ranks.[101] According to Thucydides, even Diniades, a member of the non-citizen perioikoi community was given command of a Peloponnesian fleet in the eastern Aegean in 412 (Thuc. 8.22.1). With the naval command structure both unified and opened to classes other than Spartiates, it is also possible that Sparta had instituted a command hierarchy in its navy—supreme commander, admiral, captain, helmsman and so on—similar to that which already existed in the army (Thuc. 5.66.3).

The rules were further adapted when at the behest of both the allies and Persia, Lysander, their most consistently successful naval commander, was allowed serve a second term as navarch, even though it was against the law (Plut. *Lys.* 7).[102] This last point, however, is the exception that proves the rule. Even with the lure of further cash from Persia, the establishment of naval parity with Athens, and at least the prospect of ultimate victory for the first time, Sparta was only willing to modify but not, it would seem, to radically change its institutional structures. Sparta's tenacious adherence to its hoplite-based institutions was reinforced by the Spartiate elite's visceral fear that radical institutional reform, to accommodate a predominantly naval strategy, could lead to a fundamental undermining of the established structures of power, as noted by Aristotle: 'The law about the Admirals has been criticized by some other writers also, and rightly criticized; for it acts as a cause of sedition, since in addition to the kings who are military commanders the office of Admiral stands almost as another kingship.' (Arist. *Pol.* 2.1271a39–41).

Sparta's naval ascendancy was relatively short-lived. Most of our sources take a decidedly moralistic tone when ascribing the decline and ultimate fail-

100 Crouch and Farrell 2004, 7.

101 Hodkinson 2000, 355–356. All were μόθακες, the sons of poor or disenfranchised Spartiate families raised at public expense and adopted by wealthy Spartiates.

102 Aracus was given the nominal title of navarch to preserve the legal fiction but, according to Plutarch, it was his deputy, Lysander, who was the actual navarch.

ure of Sparta to the influx of foreign money (Diod. 7.12.8; Plut. *Lys*. 16–17).[103] As we have seen, Aristotle also noted Sparta's serious shortcomings when it came to managing its public finances (Arist. *Pol.* 1271b10–17), a major obstacle to any prospect of maintaining such a financially voracious enterprise as a navy. Though Sparta had met the necessary financial conditions for establishing a naval ἀρχή, she did not meet the sufficient institutional conditions to sustain one. In path dependence terms, the formative early decision to pursue a hoplite strategy carried with it long-term historical consequences, as seen by Sparta's inability to evolve an institutional framework capable of sustaining its naval hegemony, in the long term. This is not to seek to minimise Sparta's undoubted naval successes during the Ionian War, which led her to achieving victory over Athens. Nor should the significance of the loss of Persian financial support be underestimated as an important factor in her naval decline in subsequent decades. But what Sparta singularly failed to achieve was to create strength in depth through an institutional framework designed to build and sustain an extensive navy. Without a sustaining framework, when serious difficulties arose as they did in the early 4th century, Sparta was incapable of capitalising on her considerable naval achievements. In contrast, Athens, reduced to a mere 12 triremes in 404, was able to recover much of her naval supremacy during the first quarter of the 4th century helped, as we shall see, by her historically robust naval institutional framework.

103 Hodkinson 2000, 26–30.

CHAPTER 4

War, Strategy and the Transition to Triremes

1 The Gift of Ares and Athenian Conquest Strategy

Contemporary historiography attests the prevalence of war in the Greek world. During the 150 years between Marathon (490) and Chaeronea (338) Athens, for instance, was at war in two out of every three years, and experienced no period of peace longer than ten consecutive years.[1] Finley, and many other scholars, recognised the pervasiveness of war in ancient Greece; 'it was universally accepted in antiquity that war is a natural condition of human society',[2] which was seen as 'a way of life in classical culture.'[3] Finley also posed the question, 'Why did the Greek poleis war with each other incessantly?' To which he replied; 'Greek poleis lacked the resources in men, land and materials with which to provide for their citizens the "good life" that was the avowed purpose of the state. They could overcome chronic scarcities only at the expense either of a sector of their own citizenry or of other states.'[4] The whole issue of war and conquest in the Greek world, both its ubiquity and purpose, is a rare example of significant consensus between both ancient authors and modern commentators:[5] 'As far as the Greeks themselves were concerned warfare was conceived as potentially profitable.'[6]

In Plato's *Republic*, the whole notion of economic progress and growth are clearly associated with war and conquest: 'If we are to have enough for pasture and plough, we shall have to cut a slice of our neighbours' territory. And if they too are no longer confining themselves to necessities and have embarked on the pursuit of unlimited material possession, they will want a slice of ours too … it means a considerable addition to our state, the addition of an army, which will go out and defend the property and possession we have just described against all comers' (Plato, *Republic* 372e–374a). The centrality of war to the economy of the polis was also recognised in the *Phaedo* where Plato's ascription

1 Garlan 1975, 15.
2 Finley 1985c, 67.
3 Havelock 1972, 37.
4 Finley 1981b, 33.
5 The modern consensus is not universal, as much anthropological and sociological analysis views Greek war as ritualistic and a means of maintaining social cohesion within the Greek polis, see Burkert 1983; Geller 1991.
6 Millett 1993, 183–184.

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of the purpose of war was simple and unambiguous: 'all wars are undertaken for the acquisition of wealth' (Plato, *Phaedo*, 66c). Likewise, Aristotle viewed war as 'a natural mode of acquisition' (*Politics* 1.8, 1256bl, 1256b23). According to Bolkestein, Greek states did not interfere in the economy except for 'one trade, the most extensive which Greek society ever knew, which was naturally carried on by the State, viz. the waging of war … War was a means of securing a fortune or simply a livelihood instead of or next to the other means of subsistence, consisting of labour.'[7]

The clearest articulation of Athenian conquest strategy is given by Pericles immediately prior to the Peloponnesian War: 'But we must realise that war is inevitable, and that the more willing we show ourselves to accept it, the less eager will our enemies be to attack us, and also that it is from the greatest dangers that the greatest honours accrue to a state as well as to an individual … (we) must defend ourselves against our enemies in every way, and must endeavour to hand down our empire undiminished to posterity.' (Thuc. 1.144.3). He added the important rider that to ensure success on this occasion, the Athenians must not 'attempt to extend your empire while you are at war' (Thuc. 1.144.1). In their final pleadings with Sparta and her allies to wage war on Athens, the Corinthians emphasised the need to defeat Athenian conquest ambitions: 'We must believe that the tyrant city that has been established in Hellas is a menace to all alike, with a programme of universal empire.' (Thuc. 1.124.3). To appreciate the centrality of naval power to the achievement of Athens' 'programme of universal empire' we need an understanding of the genesis of this Athenian conquest strategy during the late archaic period, a time when new trends in warfare began to emerge.

2 Emerging Patterns of War

Because of the extent to which we encounter war in Greek literature[8] and iconography there is a perennial risk of committing the historiographical fallacy of treating the prominence of war in such literary and visual references as historical evidence for its frequency.[9] Much of modern scholarship maintains that mainland Greece had such a pervasive ideology of martial values that 'warfare was virtually constant'.[10] It is a recurring theme amongst many leading

7 Bolkestein 1958, 140–141.
8 Hornblower 2007, 22–53.
9 Connor 1988, 6.
10 Fagan et al (eds.) 2010, 1.

ancient historians that Greek society per se possessed a war culture. This is epitomised by Cartledge who attributes a virtual pathological proclivity on the part of the Greeks for war, claiming: 'The Greeks practised it with single-mindedness and gusto, to such an extent that it became a defining quality of their culture as a whole'. And by way of corroboration, he lists the principal works of Greek (and Western) literature all of which have war themes: 'Homer's *Iliad*, the first masterpiece of all Western literature; to Aeschylus's *Persians*, the first surviving masterpiece of Western drama; to the coruscating war epigrams of Simonides and, last but most relevant of all, to Herodotus's *Histories*, the first masterpiece of Western historiography'.[11]

This is a type of characterisation that stretches back as far as Weber who defined the Greek polis as 'a community of warriors'.[12] It is a view endorsed by Moses Finley: 'There were … few years in the history of most Greek city-states (of Sparta and Athens in particular) and hardly any years in succession, without some military engagements.'[13] Much of this stems from the primitivist/substantivist tendency to elide diverse stages of Greek history and treat these very distinct periods as a unitary whole. Consequently, important details are sometimes obscured and changing trends become difficult to identify, a fact not helped by the paucity and vagueness of our early literary sources. Our assessments of archaic Greek warfare have thus become very dependent on archaeology and iconography, often inviting diverse interpretations. In terms of literary evidence for events of the 7th and 6th centuries, we are heavily reliant on versions written in the 5th century and later, which inevitably bear the stamp of contemporary attitudes and are unlikely to reflect the details of archaic historical realities.[14] Archaic wars tended to be about border disputes over land between neighbours (Hdt. 5.49), with few having the objective of outright annihilation of the opposition. According to van Wees, in many archaic wars 'prestige was the main driving force, and material gain a secondary issue at best' and instances the Athenian conquest of Salamis c. 600 as an example which, he suggests, was about prestige as much as land.[15]

11 Cartledge 2006, 4.

12 Weber 1978, 1359.

13 Finley 1983, 60.

14 Singor 2009, 585.

15 Privileging 'prestige' in this instance, however, fails to take sufficient account of the strategic importance of Salamis for Athenian access to and control of the sea-routes of the Saronic Gulf, particularly with respect to Phaleron, the bay of Eleusis, even Piraeus, Aegina, and the Corinthian Isthmus because 'Increasing seaborne communication from ca. 750 onwards not only gave a new importance to coastal settlements but also shaped a new perception of geography.' van Wees, 2004, 23.

As previously indicated, because of the significant difficulties in recovering sufficient details from our limited source evidence for the archaic period, rigorous trend analysis of warfare is extremely hazardous. That said, however, a broad pattern would seem to emerge in which the reported incidents of both land and naval confrontations in our sources increase and, significantly, naval encounters become a more frequent feature over time. From the list provided by L. Scott, during the last decades of the 6th century (535–505), out of a total of 20 wars or military engagements, 11 involved ships either as troop transports or in direct ship-to-ship naval battles.[16] Of these 11 encounters involving the use of ships directly, 5 seem to have been actual naval battles. It is evident from these basic figures that there was a rise in the intensity of military confrontations among Greek states in the last decades of the 6th century, with wars breaking out on average every year and a half. Not only were naval resources increasingly likely to be employed in military engagements, but it was also the case that such engagements were increasingly likely to be fully-fledged naval battles.

From this brief overview several broad trends emerge. In the last third of the 6th century there was a significant overall increase in the number of military engagements throughout the Aegean in which the use of ships became an increasing feature. As we have seen, hoplite warfare in the archaic period did not normally lend itself to extensive long-distance expeditions, the logistical requirements for which were beyond the capacity of most Greek poleis. During the second half of the 6th century, interstate rivalry intensified across the Greek Aegean basin which, of necessity, involved extensive use of warships both as troop carriers and, where naval battles did occur, largely as platforms for hoplite confrontations at sea. The vessels deployed in these naval engagements consisted mainly of penteconters, but as the patchy (and variously interpreted) source evidence confirms, increasingly, triremes were becoming a feature of such fleets. These trends that emerged towards the end of the 6th century greatly intensified from the 5th century onwards. The role of Athens altered dramatically, as she became 'a constant source of death and destruction' in Greece as her war-making 'widened, amplified, and intensified.'[17]

16 Scott 2000, 111–112.

17 Hanson 2001, 4. (Plut. *Solon*) Particularly during the second half of the 6th century the Greek state that made the most advances economically was Athens, especially under the Peisistratid tyranny when commercialisation and urbanisation grew apace.

3 Strategy

Some traditional scholarship has asserted that strategy played no part in ancient Greek thinking. Momigliano, for whom 'war was the centre of Greek life', claimed a virtual total absence of any strategic analysis of its causes: 'Yet the amount of attention that Greek political thinkers gave to causes of war is negligible in comparison to the attention they paid to constitutional change.'[18] In a similar vein, Garlan believes the alleged inability of the ancient Greeks to analyse strategically the causes of war was a result of it being 'so widespread and perennial that it appeared to be outside human initiative and to fall within the domain of nature or the realm of the gods.'[19] In his analysis of sea power, Garlan, while accepting 'the exceptional quality of their warships', sees a fundamental contradiction 'between the technological originality of maritime activity and its inferiority, in principle, to activity on land.'[20] In this he shows an all-too-common tendency among some ancient historians to undervalue the role of sea power as compared with hoplite militias, adding, 'the ancients rarely developed and elaborated their naval tactics to the same level as their land tactics … the chief reason presumably lies in the prestige of land warfare.'[21]

In archaic Greece, hoplite warfare engagements are presented in scholarship largely as short, sharp encounters, conducted almost by appointment like a dual. The battle was usually over in a matter of a couple of hours.[22] These engagements were conducted by an amateur part-time militia and were largely confined to summer season fighting in which the brunt of the casualties were borne by the first lines on both sides.[23] As a result, casualties tended not to the enormous with estimated losses standing at 5% for the victors and 14% for the defeated.[24] There was little strategic aspect to hoplite warfare with victory or defeat being essentially a question of tactics. As a military endeavour, hoplite warfare rarely lent itself to expansionary objectives.[25] Nor, for that matter, was this short, sharp and violent confrontation between two sets of heavy infantry lines governed by the ritualistic rules of contest (ἀγωνία), conducive

18 Momigliano 1984, 21.
19 Garlan 1975, 18.
20 Garlan 1975, 129–130.
21 Garlan 1975, 131–132.
22 Hanson 2009, 35–36.
23 Dawson 1996, 50.
24 Krentz 1985, 18–19.
25 Dawson 1996, 51.

to military let alone strategic innovation. Resulting in minimal demographic or economic damage, the institution of hoplite warfare was essentially a low-cost dispute resolution mechanism of considerable value in a competitive multi-state system prone to territorial and border disputes.[26] In such circumstances, analytical forethought, essential to the notion of strategy, was conspicuous by its absence. The celebrated victory of Marathon, a typical example of hoplite combat, was certainly not the result of any strategic foresight on the part of the Athenians—tactical miscalculations by the Persians effectively determined the result. Though these types of set-piece confrontations were an integral part of the Greek war culture, it was unlikely that they were the only element. All-out destructive confrontations were inevitably part of the mix as 'a ferocious pursuit of profit and honour … frequently drove the Greeks to the most uninhibited, destructive kind of "total" warfare.'[27]

More recent scholarship accepts that long-range strategic thinking had become a fundamental part of Greek military analysis during the 5th century. It was the Athenians, it is argued, who were the first to apply military force over time in pursuit of a clearly defined objective, and that this application of strategy was one of the most important 'innovations in the history of Western warfare'.[28] For many such scholars it was Thucydides, the founding father of political realism, who analysed international relations in terms of a strategic approach to the achievement of δύναμις (power).[29] Though not couched in contemporary jargon, we have in Thucydides a comprehensive analysis of how states protect their security which, for the first time, involves an assessment of the role of both strategy and grand strategy.[30] If strategy is the art of distributing and applying military means to fulfil the ends of policy, then grand strategy goes beyond the mere military and involves directing the collective resources of the state, including military, financial, diplomatic, psychological and intelligence resources on the attainment of a defined fundamental policy objective through the instrument of warfare.[31] For these scholars, while the chronicler of the emergence of Athenian grand strategy was Thucydides, its paradigmatic practitioner was Pericles who 'invented grand strategy.'[32]

26 Ober 1993, 62.
27 van Wees 2004, 117.
28 Ober 1993, 1.
29 Kallet-Marx 1993, 3.
30 Platias et al. 2010, 2–3.
31 Hart 1991, 321.
32 Ober 1993, 4.

Influenced by the dialectical rationalism promulgated by the Sophists, with its inherent acceptance of the notion of *raison d'état*,[33] 5th century political decisions taken in open debate in the Assembly increasingly adopted a utilitarian approach which viewed warfare as a rational policy instrument in interstate relations, largely separate from issues of morality.[34] Warfare was thus a rational art (τέχνη) to be analysed in terms of human behaviour in order to reveal the strategic logic of power relationships. Thucydides in his *Archaeology* identifies the key elements of the Athenian strategic approach: an acceptance of the tendency for the strong to dominate the week, the criticality of resources (χρήματα) and planning (παρασκευή), and the importance of the navy (ναυτικόν) in delivering empire (ἀρχή).[35] At the heart of this strategic enterprise was a maritime policy dependent on an essential triad of money, planning and organisation, and advanced naval technology. Over 2000 years later, at the height of late-modern naval warfare from the 17th to the 19th centuries, Thucydides' prescient prescription for naval success seems to have altered little: 'The actual strength of a navy was heavily dependent upon finance, the capability of central administration, the quality and quantity of real maritime resources, the ships, seamen and officer corps, the maritime infrastructure and the quality of political and naval decision-making.'[36]

For the Greeks hegemony (ἡγεμονία) and empire (ἀρχή) were not pejorative terms. A desire for freedom and hegemony were not considered incompatible objectives. Illustrative of this perspective is Thucydides who states; 'the Athenians, who not only were a free people, but during more than one half of this time had been an imperial people' (Thuc. 8.68). The extent to which the concept of empire inhered in Athenian thinking can be gauged from an Athenian's defence of empire in an interchange with the Spartans: 'Thus there is nothing remarkable or inconsistent with human nature in what we also have done, just because we accepted an empire when it was offered us, and then, yielding to the strongest motives—honour, fear, and self-interest—declined to give it up' (Thuc. 1.76.2). Anticipating posterity's view of classical Athens, Thucydides has Pericles provide the following justification for the Athenian Empire: 'we of all Hellenes held sway over the greatest number of Hellenes, in the greatest wars held out against our foes whether united or single, and inhabited a city that was the richest in all things and the greatest … To be hated and unpopular for the

33 Church 1973, 168. Defined most succinctly by Jean de Silhon at Cardinal Richelieu's prompting as: 'a mean between what conscience permits and affairs require'.

34 Dawson 1996, 79–89.

35 Kallet-Marx 1993, 3.

36 Harding 1999, 121.

moment has always been the lot of those who have aspired to rule over others; but he who, aiming at the highest ends, accepts the odium, is well advised.' (Thuc. 2.64.3–5)—and when Pericles speaks here of the greatness of Athens it was not the Parthenon he had in mind.[37]

Though practised throughout the centuries, naval strategy only received its first comprehensive theoretical treatment in the late 19th century with the publication in 1890 of A.H. Mahan's highly acclaimed, *The Influence of Sea Power upon History, 1660–1783*. In this treatise Mahan, a US naval officer and strategist, propounded the notion that the greatness of a nation like the United States was fundamentally dependent on its capacity to 'command the sea'. In this way, it could control international trade and get access to the resources needed for the effective prosecution of modern warfare. In Mahan's view, up to that point, maritime history and naval strategy had received insufficient attention and, as a result, 'the profound determining influence of maritime strength upon great issues has consequently been overlooked.'[38] Mahan set out to correct this deficiency, declaring the objective of his treatise to be 'an estimate of the effect of sea power upon the course of history and the prosperity of nations.'[39] Mahan, emphasising the connection between wealth creation and international trade, reasoned that America's commercial and security interests demanded control of the seas. He also saw the unique capacity of a substantial navy to project power well beyond its immediate shores. This, he claimed, had a positive dual effect of both reassuring allies and dissuading other states from embarking on a naval arms race. In many of these respects Mahan was echoing Thucydides' strategic analysis in emphasising that Athenian greatness depended on its capacity to dominate the sea.

The *locus classicus* for the important role that navies played in defining the leading poleis of the Greek world is Thucydides' *Archaeology* which instances past examples of thalassocracies; Minos of Crete (Thuc. 1.4; 1.8.2), Agamemnon (Thuc. 1.9.3–4) and, in the 6th century, the Corinthians, Ionians, Phocaeans, Polycrates of Samos and the Corcyraeans (Thuc. 1.13–14).[40] For such poleis war fleets conferred 'the greatest power to those who cultivated them, alike in revenue and in domination' (Thuc. 1.15.1). But for Thucydides, navies were more

37 Dawson 1996, 67. Foss 2006, 27. Here Thucydides' sentiment anticipates the Roman Emperor Caligula's statement, who, according to Suetonius, often quoted a phrase from the Roman tragedian Lucius Accius (170–86 BC): 'oderint, dum metuant' (let them hate, so long as they fear).

38 Mahan 2010, 13.

39 Mahan 2010, 13.

40 Figueira 1985, 62.

than just an instrument of military power like an army, they possessed a unique feature which made them vastly superior to land armies—they could be used for 'distant expeditions with conquest the object' (Thuc. 1.15.2). Less inhibited by logistical considerations, the superiority of navies over land armies in the prosecution of strategies of imperialist conquest is also emphasised by The Old Oligarch; 'those who rule over the sea can sail as far as they like from their own country, but those who rule over land cannot travel many days' journey from their own land' (Pseudo-Xen. *Ath. Pol.*2.4–5).

4 Early Athenian Expansionism

There is archaeological evidence for early (6th century) Greek penetration of the Strymon valley area of Macedonian Thrace.[41] From about 540 onwards there is also evidence for Athenian involvement with this and other areas of the northern Aegean which, subsequent to that date, 'becomes intense'.[42] Whether these activities represented a series of opportunistic expeditions on the part of individual aristocratic dynasts pursuing their own objectives, or can be considered as an expression of a more coherent and deliberate Athenian polis strategy, is unclear. The division between polis and private interests in many of these expeditions is difficult to divine from the source evidence. Most likely, there was an element of both with the extent of overlap varying over time. However, it is abundantly clear that for Athenians the allure of the economically attractive regions of the northern Aegean was long-standing.

In the mid-6th century Peisistratus took control of Sigeion at the southern end of the Hellespont. Following his second exile from Athens, the would-be tyrant of the city-state based himself near Mount Pangaion where he gained considerable wealth from the exploitation of its extensive mineral resources (Hdt. 1.64).[43] A direct connection between Peisistratus' activities at this time and the genesis of Athenian expansionism has been posited by Lavelle who attributes the 'roots of later Athenian imperialism directly to Peisistratos' northern ventures, beginning with Rhaikelos on the Thermaic Gulf'.[44] It is a position similarly argued by Rhodes, 'Pisistratus' activity marks the beginning

41 Isaac 1986, 5–8, who concludes that, 'archaeology has revealed for us early Greek expansion up the Strymon Valley which none of our literary sources mentions.'
42 Davies 2013, 44.
43 Archibald 1998, 112–113.
44 Lavelle 2005, 116–134, 126.

of a long history of Athenian attempts to gain a foothold in the region and to exploit its gold, silver, and timber'.[45]

The region was also the focus of Athenian attention when the Chersonese was occupied by Miltiades the Elder (Hdt. 6.36.1) which, according to Cawkwell, was an officially sanctioned Athenian colonising expedition, because Miltiades 'went with the compliance of Pisistratus'.[46] On Miltiades' death (520), Athenian control continued under his nephew, and then under Miltiades the Younger, the victor of Marathon (Hdt. 6.35) who was sent by Hippias as tyrant of the Chersonese.[47] When Miltiades was threatened by the arrival of the Phoenician fleet he fled back to Athens in 'five triremes' (Hdt. 6.41). Many of these archaic Athenian expansionist activities were what Figueira refers to as 'patronal' in that they were essentially individual or familial initiatives.[48] Miltiades later led a substantial Athenian expedition comprising 70 ships to 'a very wealthy land where they could easily get as much gold as they would want to have' (Hdt. 6.132). This failed invasion of Paros has been extensively interpreted as a prelude to an invasion of Thrace.[49] Miltiades also captured the island of Lemnos because, 'the Myrinaeans would not agree that the Chersonese was Attica … in this way the Athenians and Miltiades held Lemnos' (6.140.2).

In conducting these military actions Miltiades undoubtedly sought personal gain, but he was also acting as an agent of Athens as is evidenced by the claims made on his behalf at his trial some years later, that, 'Miltiades had punished the Pelasgians and taken Lemnos, delivering it to the Athenians' (Hdt. 6.136.2). In this fusion of public and private, Athenian and dynastic interests, it is difficult to say which had precedence, but its longevity indicates that it was more than just a convenient coincidence. The policy precedent of north Aegean intervention for economic reasons established by the dynasts continued, without interruption, under the democracy. Following its first military victories the Cleisthenic democracy established a cleruchy in Euboean Chalcis in which 4,000 Athenian cleruchs were settled (Hdt. 5.77.2).[50]

The long tradition of Philaid involvement with the north Aegean was continued by Miltiades' son, Cimon, whose expedition to Thracian Eion is explicitly linked by Thucydides to the beginning of the Athenian Empire, 'Besides, the history of these events contains an explanation of the growth of the Athenian

45 Rhodes 1981, 207 (15.2).
46 Cawkwell 1995, 79–80.
47 Forsdyke 2009, 123.
48 Figueira 2008, 429–434.
49 Isaac 1986, 18–19.
50 Figueira 1991, 44–45.

Empire. First the Athenians, under the command of Cimon, son of Miltiades, besieged Eion, held by the Medes, and enslaved the inhabitants' (Thuc. 1.97.2–98). Despite Thucydides contention, however, as the foregoing makes clear, Athenian expansionism was in evidence for many decades prior to this.

The economic importance of this region for Athens is indicated by Thucydides' confirmation that following this victory over the Persians, the Athenians established an emporium at Eion (Thuc. 4.102). Though either ignored or under-appreciated by historians of the empire, the significance of this emporium has not been lost on economic historians.[51] This absence from traditional narratives is partly a consequence of Finley's denial of an economic sphere which exacerbates the tendency to treat economic issues as merely the unintended consequences of political decisions.[52] Athenian economic interest in the area is further emphasised by Thucydides' claim that a cleruchy was established there 'by the Athenians, who sent ten thousand settlers of their own citizens' (Thuc. 4.102.2). The establishment of this Athenian emporium caused a direct threat to the economic interests of Thasos which operated an extensive commercial network profiting from the control of trade in the natural resources of the region.[53] The subsequent revolt by Thasos (465) was the direct result of this undermining of Thasian commercial interests in the region by Athens (Thuc. 1.100.2). In contrast with Persia, whose economic priority in the area was the extraction of tribute, Athens' objective was the direct control of the trade in the economically valuable raw materials of the region, particularly, silver and timber.[54] The former was political annexation for purposes of rent-seeking, while the latter constituted full-on direct economic exploitation.

As the preceding discussion shows, Athens had a long-standing interest in the economic exploitation of the resource-rich regions of the north Aegean which pre-dated 480. What changed from that date onwards, was that greatly augmented means were added to pre-existing motives. To safeguard the transportation routes to and from these commercially important centres, Athens soon occupied the strategically located island of Skyros, which was quickly followed by the occupation of Carystus on the southern tip of Euboea. With these conquests, Athens had full control of the commercially vital sea transit link between the Hellespont and Athens. Unlike the Persian Empire, Athens was not in a position to command the supply of naval materials, and so would have had

51 Bresson 1993, 219–220; Archibald 1998, 113–115.

52 Kallet 2013, 43–46.

53 Bresson 1993, 202–204.

54 Kallet 2013, 49, n. 44.

to rely on a combination of trade and *xenia* to acquire them.[55] Having identified the locations of strategically important naval raw materials during the 6th century, Athens' 5th century naval expansion, and its concomitant vastly increased needs for such materials, necessitated a more focussed concentration on these resource-rich zones. Naval materials procurement on this scale, especially as there would have been simultaneous competition from other poleis for the same limited materials, also forced Athens to secure exclusive access to them by concluding inter-state agreements with the local ruling dynasts such as in Macedonia.

But even closer to home, events in the early part of the 6th century reveal portents of later events and trends. Just as later with Peisistratus in Athens, according to Aristotle, Theagenes of Megara, having been granted a bodyguard became a tyrant around 600 with popular support (Aristotle. *Rhetoric*.1357b). Like the Solonic reforms in Athens, there were economic issues associated with the subsequent demise of Theagenes. After his expulsion, the Megarians instigated what Plutarch calls unbridled democracy (ἀκολάστου δημοκρατίας), as part of which 'they passed a decree which required the interest formally collected by their creditors to be paid back, calling this act the return-interest' (Plut. *Greek Questions* 18). Thus, Megara instituted a democratic programme followed by a process of reform, including economic reforms, which helped consolidate its popular political base and stave off social unrest. As part of this process, it also expanded its navy.[56]

Shortly after this, in a naval war with Athens, Megara wrested control of the strategically important island of Salamis (Paus. 1.40.4). It was an episode in which, if we can believe Plutarch writing hundreds of years later, 'the Athenians had exhausted themselves in a long and difficult war against the Megarians for possession of the island of Salamis' (Plut. *Sol.* 8). The Megarians were defeated by Solon, with the assistance of Peisistratus (Hdt. 1.59.4), but the control of Salamis was only finally resolved through arbitration by the Spartans who decided in favour of Athens.[57] Though insufficient in itself to draw any general conclusions, it is interesting to note that this conflict, from beginning to end, involved naval forces on both sides. An interesting aspect of this episode is that the reform process in Megara, known as παλιντοκία, involved reforms around issues of debt dependency and inequality, not dissimilar to those addressed by Solon's shaking off of burdens (σεισάχθεια).[58] Much of both modern scholarship

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55 Davies 2013, 52.

56 Legon 1981, 89, 114–116.

57 Legon 1981, 122–131.

58 Legon 1981, 114–116.

and our ancient sources interprets these political reforms from the perspective of inter-class conflict and political bargaining within the polis. This has resulted in less attention being given to the possibility that such reforms, in this instance in both Megara and other poleis, may also have arisen because of the need for greater military mobilisation because of the exigencies of inter-state conflict.[59]

Associated with the acquisition of Salamis by Athens is the so-called 'Salamis decree' (*IG* I^3 1), the earliest extant decree of the Cleisthenic polis and dated to the late 6th century. It contains reconstructed evidence for the establishment of a cleruchy of Athenian settlers on the island: the first recorded instance of this institution.[60] It stipulates the tax and military duties of the transplanted Athenian cleruchs, who were the physical manifestation of Athens' desire to control the western sea-route of the northern Saronic Gulf.[61] Given Megara's command of the entrance to the Saronic Gulf through her possession of the island of Salamis, it is unsurprising that Athens, as an aspirant hegemon, would wish to control her contiguous islands and promontories. The 6th century naval conflicts between Athens and her neighbours, Megara and Aegina, for strategic control of the Saronic Gulf presaged the later and more extensive Athenian ambitions for control of the whole Aegean. The difference between the two was fundamentally a matter of scale, but with one important distinction; the scale of her 5th century ambitions, had transformative consequences.

5 The Transition to Triremes

Given the limitations of our sources and the nature of the extant evidence, tracing naval developments in the 6th century Aegean is precarious, and offers considerable scope for the fashioning of divergent reconstructions.[62] The story of the archaic Greek navy involves investigating a combination of contemporaneous archaeological evidence and non-contemporaneous written evidence, a task not without its pitfalls. The principal difficulty lies in interpreting our major 5th century written sources, Herodotus and Thucydides, whose accounts of naval affairs in the archaic period are heavily influenced by their 5th century literary agendas. These demanded that the contrast between Athenian naval resources, capabilities and experience in the pre- and post-Themistoclean eras

59 Scheidel 2005, 5, in which Scheidel notes that this possibility had been previously raised in Morris 2002, 37–38.
60 Cargill 1995, 2. The important Athenian institution of cleruchy is discussed in chapter 7.
61 Salomon 1997, 192–196.
62 Scheidel, 2005, 4.

be as stark as possible. Herodotus' narrative purpose was to make Athens' role in the victory over the Persians seem as spectacular as possible. One of the ways he did this was to present the instrument of that victory, a substantial Athenian navy, as having been created in an exceedingly short timeframe. To emphasise this improbable naval achievement further, he also sought to minimise the extent of actual Athenian naval accomplishments and fleet development in preceding periods, such as during the reign of the tyrants in late archaic Greece.[63]

One of the principal drivers of the development of the archaic Athenian navy was the intense competition between established maritime poleis in the Aegean and emerging naval powers like Athens. The presence of warships is attested in painted ceramic vases from the late Geometric period onwards. These vessels are usually presented with elongated hulls, rowers on one or two levels, with deck platforms for close quarter fighting, and water-level bow protrusions. While many of these vessels are described as warships, they were neither built nor used exclusively as such. They were multi-purpose vessels normally used for trade and transportation, but deployed in naval engagements at sea, when the occasion demanded. Their status was somewhat ambiguous, with Thucydides describing them as 'pirate ships' (Thuc. 1.10.4).

The standard ship throughout the latter part of the archaic period was the penteconter, a privately-owned vessel used variously for trade, raiding, and warfare. The trireme, on the other hand, was designed as a dedicated warship, and with exceedingly limited on-board storage capacity, it had no direct role in trade.[64] Requiring a crew of 200 sailors to function at full capacity, triremes were orders of magnitude more expensive to operate than penteconters, which placed them largely beyond the financial capacity of private individuals to own. Consequently, the emerging trireme fleets of the Aegean were state navies. As the Greek poleis turned increasingly to replacing their penteconters with more expensive triremes, they had to develop new administrative and financial structures to cater for this new maritime departure.[65]

While there is much scholarly agreement on the linkages between large-scale naval innovations, the adoption of new maritime technologies, and the emergence of new fiscal and administrative institutions, the issue as to when this important transition took place is the subject of considerable scholarly scrutiny and debate. The consensus view, that it occurred in the early 5th cen-

63 van Wees 2002b, 338–343.

64 Not directly for conveying goods but they were used extensively by Athens to protect grain convoys.

65 Wallinga 1993, 101.

FIGURE 1 *Olympias* trireme
HELLENIC NAVY GENERAL STAFF ARCHIVES

tury has the backing of two of our principal sources, Herodotus and Thucydides. For their own narrative reasons, they date this critical transition from penteconter to trireme to immediately prior to the Persian war. In this respect, Thucydides is very specific: having identified the leading Greek maritime powers of the late archaic period, he states that, 'even these … seem to have been principally composed of the old fifty-oars and longboats, and to have counted few triremes among their ranks', concluding, 'indeed it was only shortly before the Persian War and the death of Darius … that the Sicilian tyrants and the Corcyraeans acquired any large number of triremes' (Thuc. 1.14.1–2). The Phocaeans, who, according to Herodotus, were the most adventurous of the maritime Greeks, 'were the earliest of the Greeks to make long sea-voyages', opening much of the western Mediterranean to Greek colonisation in the process, and who 'did not sail in round-sided ships, but in penteconters' (Hdt. 1.163.1–2; 164.3).

Favoured by geographical positioning to take advantage of both land and sea trade routes, Corinth became a wealthy city. As early as 600 Periander's revenue from trade and transit taxes was such that Corinth did not need to extract other taxes from its citizens, 'being satisfied with those from the Agora and the harbours' (Aristotle *F611.20 FHG ii F5*). It was therefore able to foreswear fiscal reliance on the more common form of tax on agricultural produce.[66] The source of her wealth was maritime trade and to protect it from piracy Corinth was the first mainland polis to create a modern navy (Thuc. 1.13.2–5).[67] To this end, they used tax revenues to 'build warships and enclose their city in a stronger wall to better protect themselves.' (Hdt. 6.46.2).[68]

Thucydides' chapter on Corinthian naval developments (Thuc. 1.13.2–5), and the *Archaeology* more generally, is of considerable thematic importance for the maritime aspect of Thucydides' narrative. This chapter contains his cardinal claim that, 'the Corinthians were the first to approach the modern style of naval architecture, and that Corinth was the first place in Hellas where triremes were built' (1.13.2). Buttressing his case for early Corinthian naval preeminence, Thucydides makes two further points: that a Corinthian, Ameinokles, built four ships for the Samians, and that the earliest known naval battle took place between the Corinthians and the Corcyraeans sometime in the mid-7th century. These are weighty historical enunciations, yet Thucydides seems to have some reservations about the veracity of his sources for this information, to judge from his use of phrases such as 'it is said' (λέγονται) and 'it appears' (φαίνεται). Because of this and some of its inherent ambiguities Thucydides' Corinthian narrative has posed considerable interpretive difficulties for modern scholarship's attempts to discern the precise meaning of his account of Corinthian naval innovation. Hornblower, who summarises the scholarly debate, concludes that Thucydides is saying that Corinth was the first in Greece to build triremes and that it began at the turn of the 8th and 7th centuries.[69] On the basis of Thucydides' precise but suspiciously rounded numbering formula (300 and 260 years), Ameinokles went to Samos in 704 to build ships and the naval battle took place in 664 (Thuc. 1.13.3–4). However, the date for this naval encounter has been down dated by later scholarship to the more credible

66 Salmon 1984, 132–139; van Wees 2013, 29–30, on late archaic period warfare-linked transition in public finance from informal 'domain States' to more formal institutions of 'tax States' with echoes of the fiscal-military state thesis of Tilly 1975.

67 As in all such Thucydidean references, his benchmark for 'modern navy' is that of 5th century classical Athens.

68 Scott 2000, 103.

69 Hornblower 1991, 42–43.

mid-6th century, towards the end of Periander's reign when there were known hostilities between the Corinthians and the Corcyraeans. (Hdt. 3.49).[70]

From Thucydides' narrative it seems safe to assume that there was a tradition in classical Athens that the Corinthians were the first of the mainland Greeks to emerge as a serious naval power. Furthermore, that the Corinthians were naval innovators and were likely to be the first among the Greeks to possess triremes. Beyond this, and despite much imaginative scholarly debate, a credibly coherent account of Thucydides' disjunctive narrative has failed to materialise. Because of fundamental doubts regarding Thucydides' temporal schema for these events, a 7th century date for the emergence of triremes in Greece is not considered likely: a more realistic date for this important occurrence is sometime shortly after the mid-6th century. Another equally important related question, which unfortunately remains largely unanswered by Thucydides' Corinthian narrative, is whether or not the emergent Corinthian fleet constituted a polis navy.

A more likely contender for a polis navy is that of Thasos. In 491 Herodotus says the Thasians 'possessed large revenues, and were using their wealth to build warships and to enclose their city in a stronger wall to better protect themselves' (Hdt. 6.46.2). With between 200 and 300 talents per annum, the Thasians' revenue stream from their mines was so great that they 'do not even pay taxes on their crops' (Hdt. 6.46.3). As Gabrielsen points out, 'The Greek state's general distain of taxes is simply a myth … the Greek state had a very healthy fiscal appetite'.[71] There is also evidence that tyrants such as Polycrates of Samos, Periander of Corinth, and many of the Sicilian tyrants had hired mercenaries and wage-earning infantry during the late archaic period (Hdt. 3.39.3, 45.36, 125.2; Diod. 11.72.3, 48.3, 53.3, 67.5–7), and to provide for this military expenditure archaic poleis resorted to a range of taxation measures as the literary evidence confirms.

A more complete understanding of the diffusion of the trireme as the ship-of-the-line in Aegean naval warfare involves coming to grips with the events surrounding one of the first attested Greek trireme fleets of significance. According to Herodotus, Polycrates, by contemporary standards possessed a large fleet of penteconters (Hdt. 3.39.3) to which, by the end of his reign, he had added an even more impressive fleet of 40 triremes (Hdt. 3.44). Polycrates built his reputation and the wealth of Samos on his ability to control the sea routes of the eastern Aegean trade, primarily through his fleet of penteconters. Pen-

70 Hornblower 1991, 44–45; Morrison and Coates 1986, 39; Contra Wallinga 1990, 136.
71 Gabrielsen 2013, 336.

teconters were powered by both sails and oars, a flexibility that made them far superior to the traditional round-ship, and which saw them widely deployed in both war and commerce (and raiding).[72] The penteconter being both a merchantman and a war galley could turn a profit; in contrast, as a dedicated warship the trireme represented a financial drain.[73]

During the middle of the 6th century, the Egyptian King Amasis began to reach out to the maritime Greek states of the eastern Aegean, among which were Rhodian Lindos and especially Samos. He further extended his influence in the eastern Aegean through his conquest of Cyprus (Hdt. 2.182). As Herodotus attests, Egypt was heavily reliant on recruiting Greek mercenaries as the mainstay of its armies (Hdt. 2.163). The rise of Persia and particularly its conquest of the Anatolian Greek states threatened this valuable source of Greek mercenary recruits for Egypt.

The association of Samos with triremes is long-standing. Polyaenus (6.45) even states that Polycrates' grandfather, Syloson, seized power in 585 with the assistance of the crew 'of a trireme ship'.[74] The scale of Polycrates' fleet in 525, comprising 100 penteconters and 40 triremes, was an inordinately large navy even by 5th century standards, and was therefore likely to have been a polis navy.[75] In terms of both cost and precociousness, Polycrates' fleet of 40 triremes is of an enigma. A plausible explanatory hypothesis is that Amasis of Egypt, who had an alliance with Polycrates and had been cut off from accessing Lebanese timber by the Persians, paid Polycrates to build these triremes.[76] This hypothesis is further supported by the fact that Polycrates had control over neighbouring Icaria and its vast forestry resources which, according to Papalas, meant that Polycrates could 'build ships for less than it cost the Athenians in the next century.'[77] This act of apparent benevolence was prompted no doubt by the Egyptian pharaoh's fear of the steady westward advancement of the Persian Empire to which Lydia (546) and Babylonia (539) had already fallen victim. In the inevitable confrontation with Persia, Amasis needed all the support he

72 Basch 1977, 7, who suggests that Polycrates preferred the penteconter because the trireme was still very much an experimental vessel of unproven capabilities. In naval warfare as in other fields, for a variety of reasons, technology transition takes time as innovations like the trireme take many decades for their superiority to become manifest.

73 Papalas 1999, 6.

74 the mention of a trireme by the second-century BCE author may well be anachronistic but it is illustrative of an enduring tradition of a connection between triremes and Samos.

75 Scott 2000, 108. For a discussion of polis navies see Wallinga 1993, 19–20.

76 Wallinga 1993, 84–85.

77 Papalas 1999, 15 n. 21. For the forest resources of Icaria see Papalas 1992, pp. 10–11, 64–65.

could garner.[78] In any case, Polycrates' large and assertive thalassocracy, with its mixed fleet of penteconters and state-of-the-art triremes, would have undoubtedly already registered in Persian imperial calculations. The Samian tyrant, a consummate adept in the arts of naval power, was quick to realise that with the Persian acquisition of the Phoenician navy the balance of power in the eastern Mediterranean had swung decisively in favour of the Great King, and that Cambyses had gained control of the sea (Hdt. 3.33, 34). Polycrates abandoned his alliance with Egypt and placed his 40 triremes at the disposal of the Persian Empire for use in the invasion of Egypt in 525 (Hdt. 3.39–45). The subsequent Aegean peregrinations of the Samian dissidents and these 40 triremes need not detain us, other than to note that their subsequent naval confrontation with Polycrates' 100 penteconters was the first recorded naval battle between the two different types of vessel, in which the out-numbered triremes won the day. This trireme fleet was subsequently defeated off Crete around 525 by the Aeginetans, presumably, also using triremes (Hdt. 3.59.3).

There is merit in Lionel Scott's contention that 'the circumstances at the end of the (archaic) period, however imperfectly understood, that led to poleis acquiring triremes proved a watershed in more ways than one'.[79] Our understanding of naval matters in the archaic period has been rendered less imperfect by a new restoration of an inscription originally discovered in 1912[80] and especially by a more recent interpretation of its contents, which up to this point has not registered in modern scholarship.[81] The inscription is a decree from Eretria dated to c. 525 (*IG* XII.9 1273 and 1272, lines 10–16), the purpose of which 'must be a regulation for the payment of men serving in the Eretrian navy', as sailors in the merchant fleet were already in receipt of pay.[82] The decree makes clear that it is intended as a provision that applies to all taxpayers, stating that, 'all must contribute'. This is epigraphical confirmation for the existence of public pay for sailors four decades before its advent in Athens.[83] Cairns also suggests that this decree on naval pay was linked with polis coinage: 'yet another reason for the Eretrian coinage issue of this period.'[84] It is worth recalling that during the Ionian Revolt (498) Eretria sent 5 triremes to assist the Ionian Greeks in their revolt against Persia (Hdt. 5.99), the sailors of which, we

78 Austin 1990, 293.
79 Scott 2000, 110.
80 Cairns 1991, 296–313.
81 van Wees 2010, 20, which contains a detailed analysis of the implications of this decree for the existence of publicly funded warship fleets during the late archaic period in Greece.
82 Cairns 1991, 311.
83 van Wees 2010, 209.
84 Cairns 1991, 311.

can conclude from this decree, would have been paid from the public purse. This decree provides important evidence that during the late archaic period, at least in Eretria, naval pay for sailors and marines was transformed from a grace-and-favour division of booty into a formal contractual relationship paid for through taxation.[85]

Additionally, Strabo confirms that Eretria had a maritime empire during the archaic period (Strabo 10, 1, 10 C448).[86] On this basis, Walker suggests that Eretria was a significant naval power and that 'ships provided the principal military force'.[87] This, combined with Herodotus' evidence that she had triremes in 499, leads Walker to conclude that Eretria had to have had polis administrative structures, including naval boards, 'responsible for organising and maintaining the armed forces of the state.'[88] More persuasively, this naval pay decree is likely to have been enacted during the reign of the tyrant Diagoras (538–509) who 'was forever making expeditions and was warlike; he built triremes and used both seas' (Nic. Dam. In *FGrH 90F58, 3*).[89] The only other attestation for the existence of a mainland trireme fleet prior to this is Corinth which, as we have seen, is credited by Thucydides with being the first in Hellas to acquire the new naval technology (Thuc. 1.13.2). We thus have credible evidence, from the 6th century, for the existence of a publicly funded trireme navy in the Greek world and an institutional framework in which triremes, coinage and taxation are inextricably associated. Though this evidence does not make it explicit that these triremes were owned by the polis, 'the likelihood is that the city was indeed constructing public triremes by 500 BCE.'[90] As van Wees argues, this early Eretrian evidence for public naval pay has important implications for our assessment of how naval warfare fleets developed in the late archaic period, much of which does not sit easily with the current orthodoxy on the evolution of poleis navies in late archaic Aegean.[91]

Unlike with the rest of its dominions in the west which once conquered remained largely quiescent, following its subjugation of Egypt in 525 Persia faced recurring Egyptian revolts for the next 130 years. As Babylonian annals, biblical sources, and Assyrian texts confirm, Persia's 6th century preoccupa-

85 van Wees 2013, 27–28.
86 Walker 2004, 122.
87 Walker 2004, 128.
88 Walker 2004, 128.
89 Walker 2004, 212, 230 n. 33.
90 van Wees 2010, 219.
91 van Wees 2010, 214. The arguments on archaic period naval developments advanced in this article have been adopted in this chapter.

tion with Egypt was essentially a continuation of a lengthy historical tradition of conflict between Near Eastern empires and Egypt stretching back over 1,000 years.[92] In the light of this well-established pattern, Ruzicka comments: 'Such evidence of continuous Persian preoccupation with Egypt suggests that in focusing on Persian and Greek interactions in the sixth, fifth, and fourth centuries we have been looking at what was really a secondary or derivative story in the broader context of the eastern Mediterranean-Aegean history …'[93] Ruzicka takes this a controversial step further by contending that 'much of Persian interaction with Greeks of the fifth and fourth centuries is incomprehensible if Persian dealings with Egypt are not taken into account.'[94]

Though not identified explicitly in the sources, a closer reading of these sources indicates that the pivotal event which triggered the rapid adoption of triremes, by both leading and aspiring Greek maritime poleis, was the Persian invasion of Egypt in 525.[95] Events in the eastern Mediterranean were about to have significant repercussions for all states in the Aegean basin. But initially at any rate, the fallout from the Persian invasion of Egypt was felt most acutely by the Greeks of the eastern Mediterranean. Following its conquest of Lydia and Ionia, Achaemenid expansion into the Levant continued apace with the voluntary subjugation of the Phoenician cities with their sizeable trireme fleets upon which Persian naval power was henceforth dependent (Hdt. 3.19.3). This acquisition by Persia of a substantial fleet of trireme warships, combined with Cambyses' invasion of Egypt in 525, also the possessor of a trireme navy, forced a strategic re-evaluation of their maritime strategies by the leading poleis of western Greece. As a continental empire with unprecedented infantry and cavalry forces, Persia posed a potential but not an imminent threat to the Western Greeks. Following its subjugation of the principal naval powers of the eastern Mediterranean and thus equipped with a very substantial fleet of triremes (Hdt. 2.159.1) manned by the best sailors and marines of its subject peoples (Diod. 11.3.7), the imminence of the Persian threat to mainland Greece increased appreciably.

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92 Ruzicka 2012, 3.
93 Ruzicka 2012, xx.
94 Ruzicka 2012, 227.
95 van Wees, 2013, 33–34.

6 Private to Polis Navies

The late archaic period represents a watershed moment which witnessed not only the increased adoption of trireme technology and the gradual replacement of the still dominant penteconter, but also a transition from privately owned to publicly owned fleets in many Greek states. Polycrates of Samos is an early example of this tendency, and a strong contender for the title of trendsetter for both transitions. Apart from making the precocious switch from penteconter to trireme there is a strong implication in Herodotus' statement (Hdt. 3.39) that both the 100 penteconters and the 40 triremes were polis vessels rather than privately owned.[96] From the Eritrean law discussed earlier stipulating publicly funded pay for sailors, it seems safe to conclude that the five triremes sent by Eritrea to assist in the Ionian revolt were also publicly funded state vessels. There is evidence that similar transitions to triremes and state ownership were also taking place in western Greece, though marginally later and in a less pronounced manner.

Corinth, as earlier discussed, took the lead in adopting a modern approach to naval construction, was the first in Greece to build triremes, and participated in the first known naval battle (against a close neighbour and colony, Corcyra) (Thuc. 1.13.2–4). Corinthian economic strength came from trade, as she 'had always been a commercial emporium' and had 'consequently great money resources … and the Corinthians acquired ships and swept the sea of piracy, and offering a market by sea as well as by land, raised their city to great power by means of their revenues.' (Thuc. 1.13.5). Again, though not explicitly stated, the implication of Thucydides' description is that Corinth's 'modern approach' extended to state ownership of part or all of its fleet.[97] This is also the clear inference from the transaction in 490 which saw the Corinthians transfer 20 ships to the Athenians to assist in their war with Aegina, for which 'they had to charge five drachmas each for them, since the law did not permit them to give the ships as a gift' (Hdt. 6.89). The existence of this Corinthian law implies that the sale of ships by the state was an occasional if not a regular occurrence, the corollary of which provides further corroboration for the existence of state ownership of warships by some Greek poleis in the late archaic period.[98] In the case of both Athens and Aegina, Thucydides confirms that the process of transitioning from penteconters to triremes had commenced. (Thuc. 1.14.3)

96 Wallinga 1993, 47.
97 Scott 2000, 106.
98 Wallinga 1993, 29.

The office of the naukraroi (ναύκραροι) of Athens is a much-debated subject. Deemed by the Aristotelian *Athenaion Politeia* to be part of Solon's constitution in which 'there were four tribes ... and there were twelve naukrariai (ναυκραρίαι) in each ... given the task of dealing with the eisphora levies and expenditures which arise' (*Ath. Pol.* 8.3). This implies that their function was as part of the local financial administration responsible for implementing decisions made elsewhere.[99] Evidence for this is provided by Photius (*FGrH* 323 F 8), quoting Cleidemus (*Atthis*), who compares the naukrariai with the symmories, which in 378 consisted of groups of wealthy individuals which came together to fund the *eisphora*. But the clearest exposition of the role of the naukraroi is to be found in the *Lexicon* of Pollux: 'these men, who governed the demes, were for some time called naukraroi ... voted on the tax-levies in the demes and the expenditures from them. Each naukraria provided two horses and one ship, after which it was probably named' (8.108). It is a clear statement that the naukraroi and the prytaneis which presided over them had both a fiscal and naval function during the archaic period. Until Athenian naval operations were more formally devolved to a combination of state and wealthy individuals through liturgies, following Themistocles naval law, 'some quasi-public institution like the naukraroi had to exist, as presumably did prytaneis to preside over their activities.'[100] But Aristotle also makes clear that under Cleisthenes' reforms the tax-raising function of the naukraroi was absorbed by the demarchs (δήμαρχοι, *Ath. Pol.* 21.5). As Cleisthenes also made the strategoi subordinate to the polemarch, who also had responsibility for the fleet, it would seem the only remaining function of the naukraroi from 508 onwards was in preparing the fleet for expeditions when ordered to do so by the polemarch. It was a role confirmed by an anonymous lexicon which states that the naukraroi where, 'those who provided the ships, acted as captains and were subordinate to the polemarch' (*Lexica Segueriana* 1.283.20).[101] Evidence for precisely this type of institutional arrangement whereby the naukraroi, under the direction of the prytaneis, continued to be responsible for the operational aspects of the navy is provided by the circumstances surrounding the ostracism of Xanthippos.

The long-running if intermittent war with Aegina was a constant preoccupation of the Athenians. In 490/89, following the capture of an Athenian sacred ship by the Aeginetans and the abduction of its passengers, who were leading citizens (Hdt. 6.87), Athens sent an expeditionary force of 70 ships (the 20 pur-

99 van Wees 2013, 45.
100 Figueira 1985, 274.
101 van Wees 2013, 48.

chased Corinthian ships and 50 of their own) to attack the island. Because the Athenians arrived late, a prearranged revolt by disaffected Aeginetans ended in a massacre of the rebels. Shortly afterwards, the Aeginetan fleet tracked down the Athenians and a second naval battle ensued in which the Athenians were defeated (Hdt. 6.93). Xanthippos, as a leading member of the prytaneis of the naukraroi, was held responsible for this ill-prepared and ultimately ill-fated Aeginetan naval adventure. This failure to muster a serviceable fleet was used as evidence against Xanthippos by his political opponents in his resultant ostracism in 485. The writer of an ostrakon is clear about Xanthippos' guilt as a member of the 'offending prytaneis': 'Xanthippos of the offending prytaneis says this ostrakon, the son of Arriphron, has committed the greatest injustice.' (*Agora* 17.10 6 5)

Based on the above, it seems likely that throughout most of the archaic period in Athens, warships were largely privately-owned penteconters which the naukraroi made available to the state in times of war. An additional responsibility of the naukraroi was the collection of irregular and ad hoc *eisphorai* as demanded by the exigencies of particular military campaigns. But the pattern across the Greek world was not uniform. Poleis with stronger economies based on more extensive international trade over longer time periods, such as Corinth, Aegina, Eretria and Samos, began the transition to trireme fleets earlier. Some of these, such as Samos and Corinth, were likely to have had a hybrid institutional structure to cater for a mixed fleet of triremes and penteconters with the former being state-owned and the latter remaining in private hands. The traditional narrative holds that for the whole of the archaic period Athens was principally a continental polis whose military activities consisted of hoplite infantry engagements. Consequently, Athens was deemed to have had little interest in naval affairs and showed little ambition in this regard until Themistocles' dramatic naval initiative of 483. It is a perspective which, though reflective of the reality for much of the archaic period, is not consonant with a detailed analysis of the historical circumstances of Athens in the late archaic period. As we have seen, by the last few decades of the 6th century, in the increasingly competitive Greek world, both militarily and commercially, Athenian naval conquest ambitions were significantly in evidence.

As discussed previously, apart from her conflicts with Aegina and Megara in the Saronic Gulf, Athenian naval expansionism was very evident in the north Aegean. As a region where there 'are forests in plenty for shipbuilding, and much wood for oars, and mines of silver' (Hdt. 5.23.2), during the last decades of the 6th century the northern Aegean was of interest to both Persia and Athens. Peisistratus conquered the Strymon region from which he derived extensive revenues (Hdt. 1.64.1) and as Lavelle points out, 'communication by sea was cru-

cial to his enterprise "on the Strymon." '[102] Peisistratus also conquered Sigeion in the Hellespont, which resulted in a long war of attrition between the Athenians and the Mytilenians (Hdt. 5.94.1–2). The first literary evidence we have for the presence of triremes in Athens is in 516 when, under Hippias, 'Miltiades son of Cimon and brother of the dead Stesagoras was sent in a trireme to the Chersonese, there to take control of the country, by the sons of Pisistratus.' (Hdt. 6.39). Some years later, following an encounter with the Phoenician fleet of the west coast of the Chersonese, Miltiades 'filled five triremes with all his wealth and sailed away to Athens' (Hdt. 6.41). But the most significant set of naval events in which Athens had a direct involvement, and for whom the consequences were ultimately far-reaching, was the Ionian revolt, which 'turned out to be the beginning of evils for both Hellenes and barbarians' (Hdt. 5.97.3). In the initial land confrontations the Greeks were victorious, as they were in a substantial naval confrontation at Salamis, off the coast of Cyprus, where the Ionians routed a Persian/Phoenician fleet. The outcome of the revolt was decided at sea in the decisive naval battle of Lade (494) where a Greek fleet of 353 confronted a Persian fleet of 600 ships, all of which, according to Herodotus, were triremes (6.8–9). If we can believe Herodotus' figures, Lade was the greatest naval confrontation the world had seen up to then and the first ever large-scale deployment of triremes totalling almost 1000 vessels.

Van Wees makes the case for the existence of a publicly funded trireme fleet in Athens by 500, a watershed departure which occurred, he contends, either during the reign of Hippias or in the last decade of the century as part of Cleisthenes democratic reforms.[103] Triremes are attested by the sources in Athens at this time, as is the fact that Hippias used a liturgical trierarchy to fund warfare (Arist. *Oeconomica*, 1347a12–14) and that he fortified Mounichia in 510, possibly to accommodate the new triremes (*Ath. Pol.* 19.2). These expensive warships required new funding mechanisms, so to this end, according to the Aristotelian *Oeconomica*, Hippias 'regarding those who were about to act as trierarchs, phylarch, choregos or to spend on another such liturgy, he fixed a moderate sum and decreed that he who wished to pay this should be entered on the list of those who had completed their liturgies' (Arist. *Oecon*, 1347a). Thus, there is some source evidence that a trierarchic liturgy to fund publicly owned warships was the creation of Hippias. But as the tax levying element of the naukraroi was not removed until Cleisthenes reforms in 508 (see above), in all likelihood, both revenue-raising mechanisms coexisted, at least for a time. That is to say,

102 Lavelle 2013, 21.
103 van Wees 2013, 66–68.

publicly owned triremes funded through trierarchy, and the naukraroi mechanism used to provide privately owned penteconters: a transitional dual system to finance a hybrid fleet of penteconters and trireme warships.

CHAPTER 5

The Late Archaic Transition—the Naval Evidence

Scholarship's standard narrative, which presents Athenian hegemony as a linear progression starting early in the 5th century with the acquisition of an extensive fleet and the formation of the Delian League, was undoubtedly in need of some recalibration. The re-examination process has been underway for the last decade or so, and is gaining increasing traction within scholarship. In broad terms, its aim is to extend current perspectives beyond a preoccupation with 5th century Atheno-centric political-military history.[1] More particularly, it seeks to move away from the Thucydidean inspired 478 commencement date of the Athenian *archē*, and views Athenian hegemonic expansion as having a much deeper and more enduring history than traditional scholarship allows.[2] It also has the important new dimension of taking the economic aspects of Athenian Empire more seriously, by 'setting it in a wide-ranging comparative perspective of state formation and economic sociology'.[3] On the specific regional aspect, Kallet suggests that applying this expanded interpretive template to the early 5th century Athenian Empire, 'reveals economic exploitation of a region informed by a continuum of economic interests (understood in terms of both collective and family) from many decades earlier.'[4]

Congruent with this approach is the implausibility of the notion that the Athenian navy of the early 5th century sprang whole and complete from the head of Themistocles around 483.[5] More realistically, and in accordance with path dependence analysis, the genesis of the navy is to be found in what I term the late archaic transition, the last three-and-a-half decades of the 6th century when, in tandem with several other highly significant institutions, the Athenian trireme navy first began to emerge.[6] The sources, most notably, Herodotus (Hdt. 7.144.1), point in that direction to some extent, variously linking Laurion

1 See Ma J. et al. (eds.) 2009; Rhodes P.J. 2008; Papazardakas N. 2009; Low P. 2008; Davies J.K. 2013; van Wees H. 2013.
2 Kallet 2013, 43–44.
3 Davies 2013, 43.
4 Kallet 2013, 44.
5 Hass 1985, 29.
6 Amit 1965, 60–61, was an early dissenter from the dominant 5th century naval narrative suggesting that Themistocles actions 'were the last steps in a process which began one hundred years before, in Solon's time and perhaps even earlier.'

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silver mines, triremes and public finance.[7] The inherent linkage among this traditional triad has an undoubted validity, however, the dating of its advent to the 5th century is based on the less secure premise that no triremes existed in Athens prior to then.[8]

The organisational requirements needed to source and transport the timber and other materials for 200 triremes, assemble a large force of skilled shipwrights, and train up to 40,000 sailors in the requisite skills to operate these new and sophisticated warships, would be a very tall order for any pre-modern state in such a short timeframe: *a fortiori*, for one with no full-time public service worth talking about. The contention, in both ancient sources and modern scholarship, that this extensive naval fleet was created *tout à coup* around 483 demands critical re-examination.

A less credulous approach would give greater recognition to the narrative imperative for such an 'instant' naval creation in the Atheno-centric accounts of both Herodotus and, for similar reasons, Thucydides. The persistence of a largely uncritical acceptance of this narrative account in modern scholarship has been assisted by the dominance, throughout much of the last century, of the primitivist-substantivist orthodoxy, which *a priori* insists that the ancient economy consisted of subsistence agriculture with no market exchange and little international trade and hence no material surplus. Lacking a social surplus, late archaic Athens did not have the financial wherewithal to pay for expensive triremes and, for the same reason, it had no need for public finance institutions. The alternative, which I canvass here as part of a path dependence institutional model, sees the emergence of the Athenian trireme navy and its supporting public finance institutions as the culmination of a more gradual process which occurred over several decades beginning in the latter part of 6th century. It was a transition which accelerated as inter-poleis competition intensified, provoking an arms race among the leading Greek maritime trading states who quickly adopted the latest in contemporary naval warfare technology—the trireme. This transition to triremes, spurred initially by internal Greek rivalry, assumed greater urgency from 525 onwards when Persia became a naval superpower.[9]

Modern scholarship, largely based on Thucydides, has long held that the advent of strategic naval power in the Aegean was an event of great import, presenting a radical challenge to the more circumscribed hoplite dominated

7 Thuc. 1.14.3, 93.3; Plut. *Them.* 4.4, 19.3–5; *Ath. Pol. 22.7; Nepos, Them.* 2.2.

8 Morrison et al. 2000, 53.

9 Van Wees 2013, 33–34 who argues that Cambyses invasion of Egypt sparked the process of large-scale deployment of triremes among Greek maritime poleis.

war ethos of the polis.[10] It also contends that this transformation began when the classical Athenians, who were previously 'not known for naval power', built a hundred strong fleet of large oared galleys in 483/2 under the auspices of Themistocles.[11] However, as we shall see, the genesis of many of the institutional underpinnings of the political economy of the 5th century Athenian naval empire are to be located in the 6th century, an important time of transition.

Unlike traders and colonists, sea-raiders are not visible in the archaeological record.[12] The practice of sea-raiding seems to have been given some official status in early 6th century Athens, as Solon's reforms stipulate that agreements between members of associations of 'men going after booty … are to be accepted as valid, unless the public documents forbid it.' (*Digest* XLVII 22. 41)[13] This gives credence to Thucydides' contention that sea-raiding, conducted by powerful men 'for their own greed and to support the needy', was a recognised activity that carried little opprobrium (Thuc. 1.5). In the case of 6th century Athens, this type of sea-raiding may also have been occasioned by intermittent crop failure.[14] The transition from maritime activities consisting of private raiding parties to state-supported navies was a leading indicator of increasing polis centralisation, however, 5th century historiographical claims for the existence of pre-Polycrates naval states is considered fanciful.[15] But from the mid-6th century onwards the pace of naval expansion accelerated as more navies began to materialise across the Aegean.

In attempting to make historical sense of these often barely discernible archaic events, various strands of scholarship have relied on three main sources: the Homeric epics, 5th century and later literary accounts, and material evidence.[16] In his assessment of the accuracy of Homer's account, Thucydides is sceptical of its overall credibility, highlighting the likelihood of exaggeration, because of 'a poet displaying the exaggeration of his craft'. (Thuc. 1.10.3; 1.21). He has similar reservations about the reliability of 'traditions' and the

10 Lee 2006, 499.
11 Lee 2006, 499.
12 Jackson 2000, 137.
13 Jackson 2000, 140. *Digest* XLVII 22. 41, quoted in Jackson 2000.
14 Jackson 2000, 147. It is most likely that this early type of sea-raiding was private rather than polis organised though, as the author stresses all aspects of this question remain conjectural because of the paucity of the available evidence.
15 Fisher, van Wees 1998, xiv.
16 A brief analysis of the epics and material evidence as sources is given here, while the literary sources are dealt with more extensively in the main body of the argument throughout the chapter.

λογογράφοι whose accounts, though attractive, are 'at truth's expense' (Thuc. 1.21). Moreover, these accounts are impossible to cross-check because time has 'robbed most of them of historical value by enthroning them in the region of legend.' (Thuc. 1.21).

The historicity of Homeric society has been the subject of considerable scholarly debate.[17] Paul Cartledge contends that 'the arguments for the existence of a genuinely historical single and uniform Homeric "society" or "period" or more vaguely "world" seem monumentally unpersuasive.'[18] In contesting this, Raaflaub lowers the bar considerably to one of making a plausible case (not proof), 'that the social background description in the epics is sufficiently consistent to reflect elements of a historical society'.[19] Claims for coherence and consistency within the epics have been made on sociological and anthropological grounds.[20] Within this methodological approach, Homer's epics are treated as 'a sort of encyclopaedia of ethics' which serves the normative function of asserting a set of values, norms and rules used to engender particular modes of behaviour.[21] One of the most influential historical-anthropological treatments of 'Homeric society' is Finley's *World of Odysseus*. Largely because Homer's epics lacked a political institutional framework of 'constitutional machinery' with 'formal organs and rules of authority',[22] Finley situated Homeric society in the 10th and 9th centuries, a periodisation which has since been refuted.[23] He accepted that Homeric society displayed sufficient social coherence such that it could be situated within an anthropological framework of evolving early societies. This, combined with the underlying assumption that archaic norms and values anticipated those of 5th century classical Athens, have had an enduring influence: 'the epics do reflect how the universe looked like around 700 B.C.'[24]

Since the 1980s there has been a growing appreciation of the importance of integrating archaeological evidence in interpretations of archaic Greece, a trend accompanied by an increasing scholarly scepticism with regard to taking later literary source evidence completely at face value.[25] This has arisen, on

17 Morris, Powell (eds.) 1997; Seaford 1994; Crielaard 1995.
18 Cartledge 1996, 687–688.
19 Raaflaub1998, 170.
20 Raaflaub. 1998, 173–174.
21 Havelock 1978, 29.
22 Finley 1977, 34.
23 van Wees 1992, 261–265, 1994, 155.
24 Hölkeskamp 2002, 307.
25 Fisher; van Wees 1998, ix.

the one hand, from the acceptance of the precarious nature through which the literary sources have come down to us, and on the other, a recognition of the inevitable distortions due to the contemporary agendas of both those committing the sources to written form, and their informants.

With respect to the use of archaeology evidence, two concerns have been expressed. First, notwithstanding the well-recognised dearth of literary evidence for the archaic period, there was a marked reluctance on the part of ancient scholarship to engage with the increasing amounts of archaeological evidence.[26] Second, as Snodgrass has also pointed out, our literary sources have largely set the agenda for archaeology, which is considered 'to have directed its energies at those aspects of the ancient world on which the written sources, taken as a whole, throw light.'[27] An example of this, it is argued, has been the manner in which Thucydides has influenced archaeological work in Sicily.[28] These reservations aside, archaeology, incorporating the totality of material evidence, has greatly facilitated the transition from a narrative history focusing primarily on political and military events to one which incorporates social and economic elements.[29] A more pertinent criticism from the point of view of our task here has been the claim that economic history, its methodologies or behavioural assumptions have, until very recently, made little inroads into the predominantly text-based domains of philology and literary criticism. In these methodologies, the analysis of Homer, Hesiod and the elegiac poets, remain pre-eminent and often require 'a naive confidence in the actuality of the earlier poets' personas.'[30] This, combined with a failure to integrate increasingly available amounts of material evidence, has resulted in a pronounced tendency to present archaic Greece as, what Ian Morris has described as, a warlike heroic age 'obsessed with honour and status'.[31]

1 Athens' 'Turn to the Sea'

Much of the grand narrative devoted to the emerging eastern Mediterranean crisis of the early 5th century focuses on *how* it happened to the detriment of

26 Snodgrass 1980, 2. This claim was made over 35 years ago, the situation has altered dramatically in the intervening decades.
27 Snodgrass 2002, 183.
28 Angelis de 2006, 29.
29 Snodgrass 1980, 13.
30 Morris 1996, 25–28.
31 Morris 1998, 3.

analysis as to *why* it occurred. Given the limited and one-sided nature of our written sources and the fact that, in this instance, the victors wrote the only surviving histories, it is unsurprising that a modern scholarly consensus has arisen which views the Persian Wars (unlikely to be called such by the Persians) as a valiant struggle led by democratic Athens against the barbarian hordes of eastern tyranny (the original 'clash of civilisations') with victory going, against the odds, to the western Greek underdogs. Fitting comfortably within this narrative of heroic Greek resistance to overweening Persian imperialist ambitions is the decision in 483/2 by the Athenian demos to create the instrument of her momentous victory over the Persians at Salamis (480), a large navy.

Much of modern scholarship gives the impression that the new Athenian navy, the largest in the Greek world, was built at the instigation of Themistocles largely to deal with the existential threat posed by the Persian Empire to Athens and the wider Greek world. As a direct consequence of the Greek victory over the Persians at Salamis (480), Plataea (479) and Mycale (479), Athens became the dominant power in Greece and soon acquired an empire: the Athenians had become imperialists almost by accident. It is a simple and compelling narrative but, like all simple and compelling narratives of complex historical events, it conceals as much as it reveals. Viewed from a post-Salamis (480) vantage point, it is tempting to see all previous events as part of an integrated matrix which culminated in this tumultuous victory. Looked at forward as the protagonists saw things, without the shadow of Salamis, we get a different, more nuanced, and yet more complex picture: one which is more in keeping with the extant sources.

Our principal sources offer two different explanations for Athens' 'turn to the sea'; the one, based on Thucydides (1.138.3) and Plutarch (*Them.* 4.10), says it was to deal with the imminent Persian threat, while the other, based on Herodotus (7.1 or 4.1–2), claims its origins lie in the long-standing and on-going dispute with Aegina. For Athens, the Saronic sea corridor formed by the islands of Salamis and Aegina to the south and the Attic coast to the north and west was an increasingly important trade route providing access to the Isthmus of Corinth and the Saronic Gulf.[32] It is unsurprising therefore that the desire to control this western sea corridor resulted in on-going hostilities between Athens and Aegina providing a more local focus for incipient but expanding Athenian maritime strategic interests. As part of its on-going conflict with Aegina, one of the most important Athenian naval engagements in the years immediately preceding Salamis occurred in the late 490s and ended in Athe-

32 Houby-Nielsen, 2009,196.

nian failure (Hdt. 6.92). One of the principal reasons for this Athenian defeat was its inability to muster sufficient naval resources to meet the Aeginetan challenge (Hdt. 6.89). The looming threat from Persia, at this juncture, would have given the struggle with Aegina an increased urgency as there was a real possibility that Aegina could provide a forward base for a Persian attack. By now, in the minds of at least some leading Athenians, the Aeginetan war and the prospect of an imminent Persian invasion were closely related issues.

In the case of Themistocles' naval expansion programme Herodotus is unambiguous, it was occasioned by the conflict with Aegina: 'Themistocles stopped this plan to divide the money by persuading the Athenians to use it instead to build 200 ships for the war, by which he meant the war against Aeginetans' (Hdt. 7.144.1). Thucydides, on the other hand, states that Themistocles' shipbuilding programme was initiated to deal with both the Aegina conflict and the threat from Persia, claiming, 'it was only quite recently that the Athenians, when they were at war with the Aeginetans and were also expecting the Barbarians, built their fleet, at the instance of Themistocles—the very ships with which they fought at Salamis.' (Thuc. 1.14.3). Similarly, Plutarch singles out 'the war against Aegina' as the sole reason for the trireme building programme because, 'this conflict, at that moment the most important in Greece, was at its height and the islanders, thanks to the size of their feet, were masters of the sea'. (Plut. *Them.* 4.5). The salient feature which three of our principal sources have in common is that they all adduce the war with Aegina as the reason for the Themistoclean shipbuilding programme of 483/2. Scholarly focus on the discrepant at the expense of the common in this regard is symptomatic of a more general failure to appreciate the role played by Aegina in helping to shape emerging Athenian attitudes towards the creation of a thalassocracy.

Athens and Aegina, one of her closest island neighbours, had been locked in an intense competitive struggle which Herodotus says resulted from an 'ancient hatred' (ἔχθρη παλαιή, Hdt. 5.81.2). Such was the long-standing animosity between these neighbouring poleis that when it came to assemble a coalition to oppose the Persians in 480, the Hellenic League decided 'that all existing hostilities and wars between one another were to be brought to an end … the most serious of them being that between the Athenians and the Aeginetans' (Hdt. 7.145.1). The intensity of this 'ancient hatred' was such that time failed to diminish it. As late as 424, during the Peloponnesian War, Aeginetan prisoners who had been captured by the Athenians at Thyrea were taken to Athens and executed 'on account of the old and inveterate feud between Athens and Aegina' (Thuc. 4.57.4). Herodotus devotes considerable attention to the three main bouts of hostilities between these neighbouring states (Hdt. 5.82–88; 5.79–81, 89–90.1; 6.49–73, 85–93), which confirms both its central

importance to his overall narrative, and the preoccupations of his informants.[33] Some modern scholars claim Herodotus' account contains inconsistencies and significant errors in its chronology, particularly in relation to the full-scale campaign (Hdt. 6.87–93) which Herodotus says occurred prior to the battle of Marathon.[34]

Aegina, a rocky, mountainous island with limited cultivable land, could overcome these economic disadvantages in the late 7th and early 6th centuries by creating a formidable fleet with extensive trading networks throughout the eastern Mediterranean. This was also the period of so-called Greek colonisation when poleis such as Corinth, Megara, Miletus, Phocaea, Chalcis and Eretria, vied with one another in founding outposts throughout the Mediterranean. Aegina did not opt for a strategy of colonisation, instead she chose one of commerce, at which she very quickly excelled. As one of the preeminent Greek maritime states of the mid-6th century, Aegina, despite having no native sources of silver, optimised her trading potential by becoming the first polis to mint its own coinage. Its 'turtle' coinage became the foremost international trading currency of much of the Mediterranean during the late archaic period, gaining widespread acceptance because of its distinctive and consistent design. It was also a clear acknowledgement by other Greek poleis of the island's commercial strength, whose maritime power was rivalled only by two other maritime contemporaries, Corinth and Samos.

While Aegina achieved its independence from Epidaurus and a commercial pre-eminence in the western Aegean based on its maritime fleet, Athens remained largely a continental power with a hoplite army preoccupied with border wars.[35] By the turn of the century, according to Herodotus' Athenian-favoured account, tensions between the two poleis were mounting and 'the Aeginetans were uplifted by great prosperity, and had in mind an ancient feud with Athens … they descended on Attica in ships of war, and ravaged Phaleron[36] and many other seaboard townships … this was how the Aeginetans' long-standing enmity against the Athenians first developed.' (Hdt. 5.81.2–3, 82.1). This Aeginetan raid on the coast of Attica in 506 inaugurated a period

33 Figueira 1985, 49.

34 The post-Marathon position is argued by Andrewes 1936/1937; Podlecki 1976 and a pre-Marathon position is taken by Jeffery 1962 and Hammond 1955.

35 As argued in chapter 4, Athens did not rely exclusively on her hoplite phalanx for military purposes. Especially from the mid-6th century onwards she increasingly deployed naval resources to advance her interests across the wider Aegean.

36 The beach area of Phaleron was used by Athens to accommodate her 6th century fleet prior to the building of the fortified harbour of Piraeus.

of almost 20 years of intermittent conflict with the Athenians who, under the guidance of Themistocles, responded by building the fortification walls at Piraeus and the major expansion of the trireme building programme in 483/2. Ultimately, this conflict had profound consequences for the Aeginetans who, having succumbed to Athenian suzerainty in 458, were finally evicted from their island by Athens in 431. The conflict also had profound consequences for the internal political balance of power within Athens, signalling the rise to power of the Themistoclean naval faction.

This brief review of Athenian-Aeginetan interactions is not an attempt to unravel the complexities of Herodotus' disjunctive narrative, and scholarly arguments for a pre- or post-Marathon date for the main war are not germane to our purpose. The 20-year period of hostilities between Athens and Aegina from 505 to the mid-480s was clearly a major preoccupation for both poleis. Just as importantly, it could hardly have escaped the attention of the Athenians that Aegina's commercial success and military prowess was due to her maritime fleet. Thus, for at least some Athenians, Aegina may well have provided the template for a strategy of conquest based on naval power. It was very likely to have influenced Themistocles to expand her existing naval foundations by building more triremes and, significantly, by fortifying the (presumably pre-existing) infrastructure to accommodate them at Piraeus: a strategy that Themistocles probably commenced during his year as archon in 493/2 (Thuc. 1.93.3). It was also a strategy that had evolved over time, as indicated by Plutarch; 'he continued to draw on the Athenians little by little and turn their thoughts in the direction of the sea' (Plut. *Them.* 4.3). That there was some aristocratic opposition within Athens to Themistocles' radical naval strategy is hardly surprising, yet, 'he succeeded, as Stesimbrotus tells us, in forcing through this policy despite the opposition of Miltiades' (Plut. *Them.* 4.3). It was a policy precipitated by, and in all likelihood inspired by, the exemplar with which it had fought an acrimonious if intermittent war for over two decades, Aegina. Just as the expanded naval strategy had internal political ramifications in Athens, the emergence of a new naval power also had implications for the regional balance of power in the eastern Mediterranean.

Because Persia was a central preoccupation for the Greeks there was a concomitant assumption that the Persian Empire was similarly preoccupied with Greece, and that 'the Great King stayed awake at night, fixated by his desire for Greece.'[37] This Hellenocentric view is not consonant with the historical realities which clearly indicate that, for most of our period, Persian foreign policy

37 Harrison 1998, 76.

priorities lay elsewhere. For example, Persia mounted two major invasions of Greece between 490 and 480, while between 525 and 332 Persia conducted 10 military campaigns against Egypt.[38] It is difficult to avoid the conclusion that if there had been a Persian or Egyptian 'Herodotus', modern scholarship's perception of Persian imperial interests in the Aegean and the wider western Mediterranean would be significantly different.

An illustration of Persian attitudes towards the Greeks can be gleaned from Herodotus' account of events surrounding the 545 Persian subjugation of the Ionian Greeks (Hdt. 1.152). Cyrus quickly disabused the Ionians of their illusions that the relatively lax regime of the Lydian King Croesus would continue under their new Persian overlord. Dismayed by this turn of events, the Ionians sought protective assistance from the Spartans who declined direct military involvement, but instead dispatched ambassadors to Sardis to warn the Great King not to harm any Greek city 'or else the Lacedaemonians would punish him.' (Hdt. 1.152.3). On hearing this, Cyrus' incredulous response was to enquire who these Greek upstarts were, and how many of them were there. Cyrus' reaction to the Spartan threat bespoke lack of knowledge and not a little contempt for his Greek interlocutors, which belies any alleged Persian preoccupation with the Western Greeks.

The stories Herodotus provides as the basis for Cambyses' invasion of Egypt in 525, some of which Herodotus himself describes as unbelievable, lack credibility. Egypt, the 4th major power in the near East, was a wealthy country and an undoubted target for Persian expansionary ambitions. Added to this was the fact that an independent Egypt also posed a threat to Persian control of the Levant (Palestine and Syria). Once Persia had conquered the Babylonian Empire it inherited the Babylonian preoccupation with Egypt. It was also, of course, the next logical strategic step following Cyrus's conquest of Lydia and the Ionian Greeks, two decades earlier. The Persian annexation of Egypt, with its deployment of a large-scale Phoenician fleet of triremes, signalled a major realignment of the balance of power within the Eastern Mediterranean. Just as importantly, it added a critical new military dimension, large-scale trireme naval power.

38 Ruzicka 2012, 'Introduction', xx.

2 Casus Belli

In the opening paragraph, Herodotus states that his principal purpose in writing his *Histories* is to record and commemorate the 'great deeds' (ἔργα μεγάλα) of the Greeks and Persians 'as well as the causes that led them to make war on each other' (Hdt. 1.1.0). He then begins a topos consisting of a mythical account (Hdt. 1.1–5) using conflicting Persian and Phoenician stories which claim that the origins of the war extend back either to the sack of Troy or the abduction of Europa, adding, 'For my part, I shall not say that this or that story is true' (Hdt. 1.5.3). It is not until Book 5, almost halfway through his account, that Herodotus states what he believes to be the origins of the conflict. Following Aristagoras's failed attempt to persuade the Spartans to provide military assistance to the Ionian Revolt (499–494) he appealed to the Athenians who voted to dispatch 20 ships, under the command of Melanthion, to aid the Ionians and 'these ships turned out to be the beginning of the troubles for the Greeks and the foreigners.' (Hdt. 5.97.3).

Fear of the growing strength of an actual or potential rival is cited on several occasions by both Herodotus and Thucydides as the motive for conflict. Sparta's increasing apprehension over the emerging power of Athens was being registered as early as 505 (Hdt. 5.91). This growing antagonism ultimately led to the outbreak of the Peloponnesian War, 'without parallel for the misfortunes that it brought upon Hellas', which, according to Thucydides, was caused by the 'growth of the power of Athens, and the alarm which this inspired in Sparta, made war inevitable.' (Thuc. 1.23). Croesus attacked Persia because 'the power of the Persians was steadily growing (and) … he wondered if he would be able to check the Persian power before it became too strong' (Hdt. 1.46.1), to which Herodotus later added a conquest motive, 'he desired to gain territory in addition to his own.' (Hdt. 1.73.1). As presented by Herodotus this Lydian attack on Persia was at least partly a defensive or pre-emptive strike. This contrasts with Croesus' earlier invasion of Ionia which was explicitly a war of conquest; (he) 'was the first foreigner whom we know who subjugated some Greeks and took tribute from them' (Hdt. 1.6.2). At the heart of much Greek thinking on warfare there was also a strong pro-active element in which wrongs, actual or perceived, were more than a mere justification for war; righting such wrongs was seen as an imperative 'deeming the punishment of the foe to be more desirable than these things, and at the same time regarding such a hazard as the most glorious of all, they chose, accepting the hazard, to be avenged upon the enemy and to relinquish these other things.' (Thuc. 2.42.4). From these, our principal primary literary sources, we can discern three distinct reasons for going to war: a pre-emptive strike, conquest, and vengeance.

Following the crushing of the Ionian revolt, in 492 Mardonius replaced the Ionian tyrants with democracies and then proceeded to cross the Hellespont and subjugate Thrace and Macedonia and the island of Thasos, all strategically important locations from a Persian prospective. But Herodotus believed that there was a much grander strategic objective behind this invasion; 'to march through Europe, advancing toward Eritrea and Athens … (because) what the Persians really intended was to subjugate as many Greek cities as they could' (Hdt. 6.43.4–44.1). In this respect, according to Herodotus, Mardonius' expedition was a failure (Hdt. 6.94.2), and with his fleet destroyed in a storm off Mount Athos, he was forced to return to Asia. Yet this characterisation of the expedition as a strategic failure is undermined by Herodotus's own admission, elsewhere, that it resulted in Persian dominion over all the territory between the Hellespont and Thessaly; 'all the peoples as far as Thessaly had been enslaved and forced to pay tribute as subjects of the King after the conquests of Megabazus and, later, Mardonius' (Hdt. 7.108.1).

The following year, 491, Darius resumed his preparations for war against Greece. Applying the later Roman adage *si vis pacem, para bellum*, he sent heralds to all the Greek poleis requesting their peaceful surrender while simultaneously ordering his tribute-paying cities 'to build warships and vessels to transport horses' (Hdt. 6.48.2), presumably to replace the ones lost in the disaster at Mount Athos the previous year. These preparations resulted in the invasion of Greece which culminated in the Persian defeat at Marathon (490), following which, Darius 'became even more determined to make war on Hellas' (Hdt. 7.1). But revolts in Egypt and Babylon preoccupied Darius, and following his death in 486, his successor Xerxes too, for much of the remainder of the decade. These revolts were also a clear indication that Persian imperial ambitions were approaching their natural limits.[39]

Xerxes expedition of 480 had a fundamentally different objective to that of Datis a decade previously. This was not to be a simple revenge attack on Athens, 'the proclaimed goal of the King's expedition was to attack Athens, but his real objective was all of Hellas' (Hdt. 7.138.1); a strategic objective underlined by the scale of the assembled military resources (Herodotean numerical exaggerations notwithstanding) and the personal participation of the King, Xerxes. Yet, just a few years earlier in 485, shortly after his accession to power, Herodotus says that 'Xerxes had no desire at all to march on Hellas, but he did muster an army against Egypt' (Hdt. 7.5.1). Xerxes interest in Greece seems to have been intermittent and was only rekindled, on this occasion, by Mardonius reminding

39 Briant 2002, 322.

the King of the great nations the Persians had conquered, 'not because they had committed injustice against Persia, but only to increase our own power', before adding ominously, 'so it would indeed be dreadful if after doing that to them, we do not punish the Hellenes, who began the wrongdoing against us' (Hdt. 7.9.2).

While we must guard against taking every utterance of Herodotus too literally, these exchanges show that Persia's approach to Greece was somewhat malleable. In having Mardonius draw a clear contradistinction between the experience of the Greeks and all the other nations at the hands of the Persians, it would seem that, in 485 the prevailing Persian motive for any attack on Greece was vengeance not conquest. This is also clear evidence that, depending on exigencies in other parts of the Empire, Persian strategic objectives regarding Greece were far from uniform over time, and included pre-emptive strikes, vengeance attacks and, conquest as part of its strategic response. It certainly indicates that the Persians did not pursue a single invariable objective of imperialist conquest towards Greece throughout the period from 494 to 480, as Herodotus at times suggests and much of modern scholarship would have us believe. It also raises a question as to what caused Xerxes to change so dramatically from a position of disengagement, bordering on disinterest in Greece in 485 (Hdt. 7.5.1), to mobilising and launching the world's largest ever military invasion force against her, just five years later?

The modern scholarly consensus which sees Persian strategy towards Greece as a single continuum of unilateral expansionism whose ultimate objective was the subjugation and integration of continental Greece into the Empire is no longer sustainable. More realistically, as the attitude of Xerxes illustrates, Persian policies must be seen as a sequence of varying responses to a dynamically changing international situation, not least of which were the actions of the newly aspiring hegemon of the Greek world, Athens. In parallel with overarching Persian expansionism, both ancient and modern commentators portray Athens' attitude as one of passive obliviousness to any contribution its actions may have made in changing the regional balance of naval power.

In particular, little attention is given to the destabilising effects which Athens' accelerating naval armaments programme would have had on Persia. It was not that 100 or even 200 Athenian triremes in themselves would have been a match for the Persian imperial fleet; it may have been fear of the inevitable arms race that would ensue from this naval build-up amongst Athens' immediate neighbours, such as Aegina, Corinth and others in the Saronic Gulf, that may have caught Persian attention.[40] If Athens, using its new-found silver wealth,

40 Wallinga 2005, 22.

could achieve greater naval dominion in western Greece then, adding other experienced poleis navies to its own expanding fleet would create a formidable Athenian naval force, one that even Persia's enormous fleet would find a challenging proposition: which, *mutatis mutandis*, is more or less what transpired five years later at Salamis.

It was Mardonius who was instrumental in overcoming the King's initial reluctance to act, advising Xerxes 'you must march against Athens in order ... to ensure that others will beware of making war on your land afterward' (Hdt. 7.5.2). Fresh from having secured a strategically important part of his eastern Mediterranean littoral by suppressing the Egyptian revolt, Xerxes would have been more keenly alert to the emerging dangers on his western flanks. It is therefore unsurprising that his initial nonchalant attitude quickly gave way to concern as he set about organising a pre-emptive strike on continental Greece with Athens as its focus. Given the difficulties in other parts of the Empire and the inherent risks of imperial over-reach (expeditions involving large amphibious elements were not the preferred option for a continental military superpower) this invasion, despite the large numbers involved, was likely to be as much about containment as conquest.

As an adjunct to its presentation of Athenian injured innocence in the face of relentless Persian provocation and aggression, it has been an essential presupposition of modern scholarship that the Athenians were in mortal dread of the Persians from virtually the time of the Ionian Revolt (499–494) because of their intervention in that conflict.[41] Yet, in 483 when he persuaded the Athenians to invest their Laurion silver windfall in expanding its fleet of triremes, according to Plutarch, Themistocles had no recourse 'to terrify the Athenians with the threat of Darius and the Persians, who were far away and few people seriously imagined would come and attack them' (Plut. *Them.* 4.5). Less than two years later in 481, such was the rampant fear of an imminent Persian assault on Greece that the Athenians and the Aeginetans called an immediate halt to the latest bout of their long-running hostilities and agreed to join a Greek coalition to confront the imminent Persian invasion.

From the first decade of the 5th century there is evidence of increased urgency in Athenian naval strategy, as confirmed by Thucydides, who has Themistocles say that 'the Athenians would gain in the acquisition of power by becoming a naval people' adding that he (Themistocles) 'immediately took the first steps in this undertaking.' (Thuc. 1.93.3–4). This growing Athenian commitment to its naval strategy, though principally directed at internal Greek

41 Kelly 2003, 175.

enemies and not Persia must, however, have been seen by Persia as posing a significant de facto threat to its interests. The emergence of a formidable Athenian naval power on the western boundaries of its empire would pose considerable challenges for a quintessentially continental power like Persia, despite having acquired naval capacity courtesy of it annexation of Phoenicia.[42]

Any doubts about the extent that this emerging naval threat posed to Persian interests would have been dispelled by public debate in Athens surrounding the so-called Themistoclean Naval Decree of 483.[43] It would have crystallised Xerxes' thinking and in the process helped inspire a Persian reaction of overwhelming force in an effort to eliminate the nascent threat. In an earlier, and much smaller, threat, emanating from Naxos, the Persians agreed unhesitatingly with Aristagoras' proposal to eradicate the rising naval power. Though none of our sources say so explicitly, on the balance of historical evidence, Persia was unlikely to react other than decisively to the emergence of the most serious naval challenge yet to its imperial ascendency since the Egyptian revolt. The inevitable Persian response, which caused such consternation in Athens, may well have been an unintended consequence of Athenian naval expansion from the 490s onwards. Yet, paradoxically, though the Persian invasion was ultimately a failure, it was instrumental in facilitating the delivery of the essential objective of Athens' naval strategy of conquest—the domination of Greece and the creation of an Athenian Empire (Thuc. 1.93.3–4).

3 The Athenian Naval Revolution

As will be clear from the following discussion, modern scholarship views the advent of the Athenian navy as the unique outcome of early 5th century developments in which Themistocles is presented as the prime mover in creating a naval fleet of unprecedented size—the 'father of Athenian naval power'.[44] Its uniqueness is attributed not only to the scale of the building programme, but to the fact that it was achieved within such a short timeframe of about two years. Within this scholarly interpretation, the precise circumstances of how these

42 It should also be recalled that previous naval invasion attempts were salutary failures. In 492 the Persian was fleet destroyed at Mount Athos (Hdt 6.44.2–3), and, of course, Marathon (490), was an amphibious invasion.

43 Scholarship on this decree is vast and contentious. Jameson 1960, is the original publication. The modern consensus doubts that the authenticity of inscription, but accepts that it reflects an extensive debate on Athenian naval strategy at about this time (483), see Fornara 1967.

44 Hale 2010, 89.

events unfolded have been the subject of extensive debate and disagreement by historians, both ancient and modern. The issue of the number and cost of the triremes built under Themistocles' auspices is posed bluntly by Labarbe, in *La Loi Navale de Thémistocle* ':100 ou 200 navires? 100 ou 200 talents?'[45] Herodotus (7.144.1–2) says that Themistocles' proposal was for 200 ships and the source of the silver was Laurion, while *Athenaion Politeia* 22.7 refers to the mines at Maroneia and a total revenue of 100 talents for 100 ships. Labarbe's elegant but unorthodox solution to these conflicting source numbers is to assume that there were two naval decrees and two sources of revenue, Laurion and Maroneia, each providing 100 talents thereby enabling the construction of 200 ships. This is a hypothesis which, as Gabrielsen points out, 'rests on the hazardous harmonisation of conflicting testimony.'[46] To support his two-decree proposition, Labarbe appeals to ancient authors 'on conçoit que divers auteurs anciens n' aient été informés qu' a moitie';[47] an appeal dismissed by Podlecki as 'misplaced confidence in the reliability of "auteurs anciens" whose testimony must always be weighed, and often rejected.'[48]

Other scholars have offered different combinations and permutations of these numbers by including figures from the later sources in an attempt to square this numerical circle: none has done so convincingly.[49] Though all approaches stem from the central objective of the need to explain the presence of 200 Athenian triremes at Salamis, there are essentially two schools of thought as to when these warships were constructed. The one, a more dramatic and, frankly, less probable scenario, is that it was the result of a crash-building programme over two years beginning in 483. The other considers the Athenian naval expansion the result of a more gradual build-up over many years. Considering the massive resources and logistical challenges involved, it is difficult to disagree with Gabrielsen's assessment as to which was the more likely scenario, a crash programme or a gradual build-up; 'There is much to make the latter a considerably more attractive proposition.'[50]

A summary of the literary source evidence emphasises the following: that in the years immediately preceding Xerxes' invasion Athens launched a large-scale trireme shipbuilding programme; that it was financed by a windfall of

45 Labarbe 1957, 21.
46 Gabrielsen 1994, 29.
47 Labarbe 1957, 50.
48 Podlecki 1975, 202.
49 This issue of the reliability and consequent difficulties surrounding the use of numbers in our ancient sources is discussed further in chapter 11 'Size Matters'.
50 Gabrielsen, 1994, 31.

silver from the Attic mines; and that this programme was instigated by Themistocles in opposition to a proposal to disperse the windfall as a once-off 10 drachma gift to each citizen. Herodotus reports that using the silver from Laurion, Athens built 200 triremes in order to prosecute a war, not against the Persians, but against Aegina with whom it had a long-standing dispute (Hdt. 6.87). While Aristotle talks of the silver from Maroneia being used to build just 100 ships which, he says, were subsequently used at Salamis. Thucydides, Plutarch, all follow the Herodotean position, that the war with Aegina was the motivation behind the shipbuilding programme. Plutarch, Polyainos, Cornelius Nepos, and Libanios all opt for 100 ships, while Justin sides with Herodotus claiming 200.[51] Any realistic attempt at a detailed reconciliation of these incompatible accounts is clearly impossible. The early 5th century foundation of the Athenian trireme navy is also endorsed by the leading scholars in the field of Greek maritime history: 'It is clear that between 499 when Athens had no triereis to send to the help of the Ionians at Lade and 480 when she had 200 … Athens had made a serious attempt to become a maritime power.'[52]

As discussed above, arising principally from ambiguities and contradictions in our sources, modern scholarship has been riven with debate and disagreement over the exact circumstances of the emergence of the Athenian navy. But on one aspect there is virtual unanimity across both ancient sources and much of modern scholarship, that the Athenian navy came into being in the 5th century and was the heroic achievement of one man, Themistocles.[53] According to this commonly accepted narrative, against the odds and internal Athenian opposition, Themistocles persuaded the Athenians to spend a lucky find of silver not on immediate consumption, as was seemingly the norm, but to invest it instead on an unprecedented large-scale crash-programme of shipbuilding. Consequently, through this fortuitous combination of luck, individual political genius and collective sagacity on the part of the Athenian demos, the fleet of 200 Athenian triremes that was instrumental in defeating the Persians at Salamis had been created almost at a stroke.

51 Jordan 1975, 19.

52 Morrison et al. 2000, 53.

53 van Wees 2013, 1–5, is a significant dissenter from this orthodoxy, providing cohesive and compelling arguments throughout the monograph as to why it may be a good story but bad history. This aspect of my analysis owes much to the hypothesis van Wees puts forward here.

4 Themistocles' Naval Expansion

Thucydides makes it very clear that Themistocles was the prime mover in fashioning and overseeing the implementation of the novel navel strategy which became the foundation of the subsequent Athenian Empire: 'For he first ventured to tell them to stick to the sea and forthwith began to lay the foundations of the empire.' (Thuc. 1.93.4). As an integral part of this naval vision Themistocles viewed the Piraeus as more important, strategically, than Athens, because if attacked by land the Athenians could 'go down into the Piraeus, and defy the world with their fleet.' (Thuc. 1.93.7). The implications of Thucydides' portrayal of Themistocles are clear: he was blessed with a unique sense of foresight which manifested itself as early as 493 when, as eponymous archon,[54] he began the fortification of the Piraeus and urged the Athenians to pursue his strategy because they 'would gain in the acquisition of power by becoming a naval people.' (Thuc. 1.93.3).[55] In similar vein, Plutarch extols the strategic vision of Themistocles who argued that if they switched strategies from a less than effective hoplite army to a navy, with 'the power they would command in their fleet they could not only drive off the barbarians, but become the leaders of all Greece.' (Plut. Them. 3–4).

But this version of Themistocles as a statesman possessed of a long-standing naval vision which he pursued consistently for over a decade may be as much the product of our sources hindsight as that of Themistocles' foresight. His perceptiveness seems not only prescient but highly contrarian, considering that his promotion of a naval strategy was accompanied by his disparagement of the army—'no match even for their neighbours' (Plut. *Them.* 4). The political context in which Themistocles' contrarian and counter intuitive naval policy was being advanced also seems less than propitious. Athens was basking in a post-Marathon glow of victory which saw Athenian hoplite prestige at its zenith and the reputation of the Marathonians virtually unassailable. Anterior navel combat experience was not bode well either. The only other significant military encounter between Greeks and Persians was during the Ionian Revolt, a less than auspicious naval precedent which culminated in a humiliating defeat for the Greek fleet at Lade (494), largely due to Greek indiscipline and dissent

54 Podlecki 1975, 45–66. Who discusses the archonship of Themistocles and other aspects the source material that has been the subject of considerable scholarly debate.

55 Davies 1971, 213; Murray 2007, 30. Herodotus' account of Themistocles is considered to be less encumbered by Thucydides' hagiographical predilections because his sources were mainly aristocratic and mainly hostile to Themistocles.

FIGURE 2 Themistocles: architect of the Athenian naval expansion
ORIGINAL WATER COLOUR ILLUSTRATION BY MIEKE VANMECHELEN

(Hdt. 6.11–15). All in all, these were not the most ideal political circumstances to deliver an abrupt and radical u turn in Athenian military strategy.

As is invariably the case, when our sources disagree differing modern interpretations abound. Frost, for instance, accepts that Themistocles was archon in 493/2, but that if he had anything to do with the building of the Piraeus fortification walls, it was the result of an ad hoc response to needs rather than a first step in a grand naval design.[56] Similarly, Lewis questions Themistocles' presumed foresight with respect to the Piraeus as somewhat of an exaggeration, as it could have been just a logical defensive response to events such as 'the Aeginetan raids on Phaleron (Hdt. v.81.3) will have provided some evidence of the possible advantages of a fortified harbour.'[57] The visionary strategist view of Themistocles is taken by Podlecki, who contends it was 'a scheme he had cherished at least since his archonship, the transformation of Athens from a second-rate land power to the leading maritime state in Greece.'[58] Indeed, Hanson argues that it was at Marathon, where Themistocles served as a hoplite, that his naval insights really crystallised. As he witnessed the ease with which the Persians could land an army from the far side of the Aegean and, even when in disorganised retreat following their heavy defeat in battle, were able to save most of their forces by withdrawing by sea.[59] From this experience, it is claimed that Themistocles saw the importance of a naval strategy for the future of Athens, and concluded, counter intuitively, that 'Marathon was an anomaly rather than a blueprint.'[60]

This scholarly tradition of the virtually instantaneous creation of an Athenian fleet of unprecedented size by Themistocles in 483 has sometimes been bestowed with extravagant historical significance: 'All the glory of Athens—The Parthenon, Plato's Academy, the immortal tragedies, even the revolutionary experiment in democracy—can be traced back to one public meeting, one obstinate citizen, and a speech about silver and ships.'[61] Though expressed less flamboyantly in terms of its effects, Hass also contends that what happened in

56 Frost 1980, 73–78.

57 Lewis 1973, 757.

58 Podlecki 1975, 11.

59 Avery 1973, 757. At 192 the number of Athenians killed at Marathon as reported by Hdt (6.117.1) is uncontroversial, but Persian losses at 6,400 seem extraordinarily high. As Avery points out, the number three has a mystical significance in Greek religion and the fact that 6,400 divided by 192 yields 33.3 recurring, he concludes, 'this special and suspicious connection between the number of Athenian and Persian dead should cast some doubt on the historicity of the number of Persian dead.'

60 Hanson 2014, 21.

61 Hale 2010, 3.

483 was a ‘revolution which transformed the nature and scope of Athenians naval power’, which in time had transformational consequences for Athenian society and politics.[62] There is a scholarly consensus on the wider political, social and economic ramifications of Themistocles’ shipbuilding programme, but its precise scale and exactly when it was carried out remains controversial. The resource issues and practical logistics of delivering a crash shipbuilding programme of up to 200 triremes in less than two years are formidable: acquiring large quantities various materials, particularly dried timber suitable for shipbuilding,[63] skilled craftsmen to fabricate the vessels, building storage facilities for the ships’ gear and the completed ships and, not least, training up to 40,000 of various categories of sailors to operate the triremes;[64] especially for a polis which, this view insists, had little experience with triremes prior to this.

Trying to square the circle of our source disparities on the details of Themistocles’ naval programme involves making assumptions, partly reliant on the ancient written evidence, but also based on a balance of probability. The scale of the logistical challenges, timber-drying requirements, infrastructure, and labour demands for a presumed naval neophyte would suggest that a single-event building programme is less likely. A strong argument for this position is made by Gabrielsen who suggests that, whether Themistocles-inspired or not, a naval policy was in place prior to 483/2 and ‘although an emergency program was commenced in 483/2, some shipbuilding had been carried out in the preceding years.’[65] Such a two-phased construction hypothesis may also help account for other apparent source anomalies, such as the 70-ship fleet the Athenians granted to Miltiades which he used to invade Paros (Hdt. 6.132),[66] as well as the 70 ships used against Aegina (Hdt. 6.92) all of which happened around 490.[67]

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62 Hass 1985, 46.

63 Schreiner 2002, 199. An additional difficulty was that this unprecedented trireme construction programme was being done at a time when Macedonia, the principal source of ships’ timber (especially oar spars) was under the control of Persia.

64 van Wees 2004, 208. Based on the controversial Themistocles’ Decree (Meiggs and Lewis 23), van Wees suggests that Athens had only sufficient citizen manpower at this time to provide 100 sailors per trireme and so used thousands of slaves to make up the shortfall in rowers.

65 Gabrielsen 1994, 33.

66 This fleet is likely to have consisted of triremes or mainly triremes as we know the navy of Paros had access to triremes (Hdt. 6.133) and penteconters against triremes makes little naval sense.

67 Schreiner 2004, 76.

I will argue that the advent of the classical Athenian navy was not the result of an 'instant' occurrence but rather the result of a process that began in the previous century: as with many instances in life, it took decades for the Athenian navy to become an 'overnight' success. It will also be argued that, integral to this process, the proximate cause of the ramp-up in construction of naval armaments was the conflict with Aegina in the late 6th century and not just the Persian threat.[68] In path dependence terms, the more important underlying factors which facilitated Athens' progression along its selected naval military strategy were present in the 6th century. In the preceding four decades or so prior to 480, Athens would have become institutionally more constrained through the increasing effects of 'lock-in' which would have made pursuing any alternative strategy progressively more difficult. Furthermore, just as the democratic revolution did not need a Cleisthenes, the naval revolution did not require a Themistocles and, *a fortiori*, the transformation of the political economy of Athens was also a 'leaderless revolution'[69] which can best be understood in terms of the outcome of emergent processes within a complex adaptive system.[70] When a dynamic system such as the political economy of classical Athens begins to experience significant change, the micro behaviours of a population of agents can produce macro outcomes that are far greater than random chance alone can account for. These not-quite-regular and not-quite-random outcomes are far from the rational-equilibrium results predicted by the standard neoclassical model. The network structure of these interactions between the agents and their environment are endogenously produced macroeconomic outcomes that are emergent phenomena of the dynamic system.[71]

The unfolding of the Athenian Naval Revolution[72] should thus be seen as a two part process in which critical institutions emerged during the latter part

68 It is also arguable that the Persian impulse to intervene in mainland Greece may well have been given added impetus by Athens' own build-up of naval armaments during the late 6th century.

69 Ober 2007, uses the phrase in describing the advent of democracy under Cleisthenes.

70 Waldrop 1992, 82. See Colander 2000, for an excellent historical survey of the application of complexity concepts in economics.

71 Beinhocker 2007, 86,164–168; Anderson 1972, 396, contains a seminal discussion on the scientific aspects of this concept in which his concluding remarks are: 'Marx said that quantitative differences become qualitative ones, but a dialogue in Paris in the 1920s sums it up even more clearly; Fitzgerald: The rich are different from us. Hemingway: Yes, they have more money.'

72 To avoid an unnecessary neologistic exercise, the terms 'Naval Revolution' and 'Themistoclean' will continue to be used throughout for narrative simplicity but the use of 'Revolution' does not connote 'Bastille' or 'Winter Palace' type single dramatic event. Nor does the use of Themistoclean imply that Themistocles is considered its unique architect from

of the 6th century that provided the framework for the later naval economy to grow and evolve.[73] This transitional phase of institutional development and maturation was accompanied by a gradual consolidation of naval infrastructure and shipbuilding which proceeded in a relatively linear manner.[74] This, combined with a series of exogenous conflict events, beginning with Aegina and continuing through the first two decades of the 5th century down to Xerxes' invasion, provided continuous momentum which culminated in a scaled outcome that had transformative effects on the system as a whole. In terms of the new institutional methodology, the system then reached a tipping point in which the impetus of the cumulative build-up in the quantity of institutional innovations and other changes resulted in a qualitative paradigm shift.[75] The macro consequences that flowed from this complete transformation of Athenian military capacity had profound repercussions for the socio-economic and political structures of the city-state which continued to reverberate for over a century and a half.[76]

We also need to remind ourselves that the Athenian naval revolution exhibited many of the features of the later European one: a state navy,[77] specialised warships replacing merchantmen, new line of battle tactics, unprecedented investment in ships and on-shore naval infrastructure—all of which happened over two thousand years before a similar process occurred in Europe. As we have seen, the political, economic and social consequences of innovations in the structure and organisation of military and defence systems of early modern Europe were transformative. It is a central contention of this book that

concept to execution. The whole point of the analysis here it that once events started down a certain path, forces within the complex adaptive system of the political economy itself continued to propel it beyond the capacity of one man to reverse or redirect the process. However, Themistocles' superb set of political skills were instrumental in delivering a speedier and more extensive path dependence outcome.

73 Trierarchy and increased monetisation are two of the critical institutional developments during this phase which will be discussed in detail later.

74 Piraeus fortification walls were begun and clearly some shipbuilding was taking place as the crash-programme was logistically improbable.

75 Gould 2002, 774–775. In evolutionary biology this process is referred to as 'punctuated equilibrium' for which Gould provides an explanation.

76 The clearest analogy of this type of systemic transformation is that of an avalanche, in which a gradual build-up of the quantity of snow leads to a dramatic qualitative environmental change. In this process, we can never identify the particular snow-flake that caused the avalanche, but the dramatic differences in the before and after situation are clear and obvious.

77 By 'navy' I mean in the modern sense as defined by the OED (11th ed), 2006, 'the branch of a state's armed services which conducts military operations at sea'.

the strategic shift by classical Athens in adopting a naval strategy had concomitantly enormous socio-economic and political repercussions, not alone for contemporary Athens but ultimately for the whole historical trajectory of modern Europe.

To summarise, therefore, there are several reasons why the consensus narrative of heroic individual endeavour as the sole basis of the creation Athens' formidable navy is historically dubious. From a path dependence perspective, it is evident that the development of an institutional framework capable of delivering a complex strategic policy initiative such as a large-scale navy (and all that goes with it) is not something that occurs overnight.[78] Even the necessary, but far from sufficient, systems of finance and administration, the essential 'complex apparatus of government', require time to evolve and cannot be suddenly conjured into existence, no matter how immanent the existential threat is presumed to be.[79] As alluded to previously, the logistical challenges of a crash-programme of naval construction on the scale suggested would have posed enormous practical difficulties: these were such as to make a crash-programme of up to 200 triremes not just unlikely, but improbable. However, if one takes into consideration the fact that Themistocles commenced his political leadership of Athens when he became archon in 493/2, a full ten years before the later intense phase of the shipbuilding programme began, a more general reconciliation of these conflicting sources may be possible if, for instance, an entirely feasible preceding programme of building 10–12 ships per annum had been instituted.

The hypothesis that the fleet that fought at Salamis was constructed in two separate phases is not without support in the sources and, as indicated above, the role of Aegina is central. The significance of Aegina, a formidable naval power which had sided with Persia pre-Marathon, for phase one of the shipbuilding programme has a basis in Thucydides (1.14.3) as well as in Herodotus (7.144). Plutarch (*Them.* 4.2–3) also says that it was the conflict with Aegina, then current, that was the inspiration behind the requirement to build ships, a policy opposed by Miltiades, who died in 489. In 493, the year after the defeat of the Greeks in the Ionian war, the anti-Persian Themistocles was elected archon and, in the immediately subsequent years, the conflict between Athens and

78 It is this slow maturation process of institutional development, combined with an inherent flexibility that give institutions their analytical importance in understanding historical developments.

79 van Wees 2013, 44–53, argues that these financial and administrative structures for the navy developed over a considerable time from the early decades of the 6th century.

medising Aegina reached a new intensity, which included: the kidnap of prominent citizens, provoking a coup attempt in Aegina, and several naval battles.[80]

In these circumstances, Themistocles 'had only to play upon the enmity and the jealousy the people felt towards the Aeginetans (so that) the Athenians built a hundred triremes with the money' (Plut. *Them.* 4). Thus, a possible alternative explanation for the Athenian naval expansion would include the following principal elements. The first phase of Athenian trireme acquisition began in the late 6th century and was added to annually, especially from 493, following Themistocles' fortification of the Piraeus. The second phase, from 483 onwards, consisted of a more intense construction programme which delivered a further 100 triremes. This a two-phased expansion of the Athenian fleet, combined with 'the collaboration of the former enemies Athens and Aegina, rendered possible the victory of Salamis.'[81]

So, how do we explain our sources and modern scholarships' over-egging of the narrative pudding? Put simply, the 5th century authorial agenda had two principal ideological aspects. First, to promote Athenian exceptionalism vis-a-vis other Greek poleis and second, to highlight the greatness that was contemporary Athens, when compared with her pre-Marathon history. In the case of Herodotus, for example, Irwin draws our attention to an important aspect of his narrative technique: 'namely the degree to which the present is implicated in the act of recounting the past.'[82] Contrary to most modern interpretations which claim that Herodotus' interest, for example, in Samos was a purely personal affectation, Irwin argues that his long narrative on Samos had the real but unstated purpose of drawing the attention of his contemporary audience to Periclean Athens' difficulties surrounding the Samian revolt, 'that defining event in the history of Athenian arche.'[83]

Similarly, Thucydides starts with a polemical assertion on the importance of his undertaking in recounting the history of the Peloponnesian War, which he claimed to have recognised from the start as a war greater 'than any that had preceded it' (Thuc. 1.1). In contextualising it, he drew a graphic picture of the economic backwardness of archaic Greece by way of contrast with his own times, a type of economic analysis that he failed to pursue in his main narrative.[84] This, as far as Finley was concerned, was largely a theoretical exer-

80 Figueira 1988, 49–89, contains a detailed account of this conflict which attempts to resolve the considerable chronological difficulties of the sources.

81 Schreiner 2004, 135.

82 Irwin 2009, 413.

83 Irwin 2009, 416.

84 Hornblower 1991, 7.

cise 'derived from prolonged meditation about the world in which Thucydides lived.'[85] It could hardly have been otherwise, since the normal tests of historical accuracy 'could not be applied to a past that was not only non-eye witnessed but also pre-documentary.'[86] But we must also remember that for these ancient writers, history was 'an unabashed branch of literature'[87] and that resorting to 'Great Man' explanations for major historical events was a widely practised historical method, right up to modern times. Our sources, and mainstream modern scholarship, have largely failed to appreciate what van Wees has authoritatively canvassed: that 'the key structural changes had already taken place in the sixth century.'[88] What transpired in the 5th century, therefore, was more than just a change in scale. As argued previously, it was these quantitative changes that necessitated an intense application of a network of institutions which then triggered an avalanche of qualitative re-ordering whose political, economic and social consequences were unprecedented.

With his impressive war-fleet of two hundred triremes secure in the newly fortified precincts of the harbours at Piraeus, Themistocles had further essential requirements before Athens could continue and expand its successful naval strategy, an ongoing source of ships and finance. (Diod. 41.2–4). As a maritime alliance, the stated objective of the Delian League (478/7) was to complete the task of removing the Persians permanently from the Aegean. With the contributions of the allies in either money or ships, the erstwhile voluntary alliance soon became an instrument of Athenian rule. There is source conflict as to whether the League was the initiative of the allies or the Athenians and, if the latter, whether Themistocles had a role in its establishment which, according to Peter Green, 'remains uncertain: it was undoubtedly the kind of long-term practical scheme at which he excelled.'[89] In any event, within a year of the comprehensive defeat of the Persians on continental Greece by forces jointly led by Sparta and Athens, the leadership of Greece had passed emphatically to Athens.

85 Finley 1986, 18.
86 Cartledge 1993, 34.
87 Kallet-Marx 1993, 2.
88 van Wees, 2013, 5.
89 Green 2006. 100 n. 166.

CHAPTER 6

Money, Markets and Naval Procurement

1 Coinage, Silver and Money Supply

During the 6th century, institutional innovation was not confined to the political and legal spheres. Coinage was as counter-intuitive and radical a concept as that of Pre-Socratic monism, in which everything in the world was explained in terms of a single substance.[1] Though not the inventors of coinage, the Greeks took to the concept with alacrity.[2] Shortly after its invention by the Lydians (Hdt. 1.94.1), coinage spread rapidly throughout the Greek world during the 6th century, creating 'the first ever completely monetised society.'[3] It was a time when the pre-coinage world of the Homeric epics began to be replaced by the monetised political economy of the polis. This involved a cognitive shift whereby a single entity, coinage, had the capability of uniting a multiplicity of goods, and in doing so, inaugurated a ubiquitous network of impersonal market exchange. Incorporating the principal elements of money, this coinage made the Greeks the first people in history to employ extensively a form of money strikingly similar to that of today.

Aristotle's view that coinage emerged in the Greek world as a means of facilitating trade may be a necessary, but it is not a sufficient condition, to explain its precocious and pervasive use by the Greeks (Arist. *Pol.* 1257 ab). For instance, the Phoenicians, traders par excellence, felt no need to adopt coinage and only did so in the 5th century as a result of contact with the Greeks in the western Mediterranean. From an institutional development perspective, coinage has an unusual duality, having both a physical and social dimension. To gain societal acceptance the institution of money requires a collective trust and confidence in its future exchangeability, a point noted by Aristotle; 'And for the future exchange—that if we do not need a thing now we shall have it if ever we do need it—money is as it were our surety.' (Arist. *Nic. Eth.* 1133b).

1 Seaford 2004, 183–200.
2 Howgego, 1995, 14–18.
3 Seaford 2004, xi. Seaford argues that the spread of coinage and the monetisation of the Greek poleis during the 6th and 5th centuries 'contributed to a radical transformation in thought that is, in a sense, still with us.' He also comments that 'Academics—perhaps because they are more interested in texts than in money—have emphasised rather the role of alphabetic literacy in the radical intellectual changes on this period.'

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One of the first to recognise the importance of silver in developing a military capability, in his case to defeat his aristocratic enemies, was Peisistratus (Hdt. 1.62.2–63.2). The ready availability of silver in Thrace was probably one of the principal reasons why he opted to spend his second exile there during the mid-6th century (Hdt. 1.64.1; *Ath. Pol.* 15.2). It was as a result of the wealth he accrued there that, 'Peisistratus gained Athens for the third time, rooting his sovereignty in a strong guard and revenue collected both from Athens and from the district of the river Strymon' (Hdt. 1.64.1). Coinage was first adopted in Athens during the early period of Peisistratus' tyranny (546–535) and is closely associated with the Wappenmünzen (heraldic coinage).[4] A real transformation in Athenian coinage took place around 525 with the minting of the tetradrachm which became 'the cornerstone of Athenian minting for the next several centuries.'[5] It signalled a change in Athenian monetary policy which had a new economic focus on international market exchange.[6] The beginning of the Owl coinage proper is variously dated to around 515 or 508/507, as scholarship has been divided as to whether its provenance was Peisistratid or Cleisthenic.[7] However, Kroll, in agreement with Kraay, argues that the Owl coinage originated under Hippias not later than 515, and so was a product of Peisistratid expansionist economic proclivities.[8]

An important factor relating to economic efficiency, and hence a critical determinant of economic performance, is the reduction in the costs of transactions. In any economy, money is a critical component in both facilitating an increase in the complexity of transactions and simultaneously decreasing their costs.[9] Reduced transaction costs help to expand the operational realm for economic behaviour more generally, and market exchange in particular. In ancient Athens coinage facilitated market exchange in two important ways. First, by obviating the need to weigh silver, exchanges using coinage were made faster, simpler, and more efficient. Second, having the imprimatur of the polis in the form of a readily recognisable stamp helped enhance confidence in the reliability of the underlying silver, increasing its acceptability and thus further enhancing its transactional efficiency.

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4 Kroll, Waggoner 1984, 332. Contra Kagan 1982, 343–360, who argues for a much earlier date under Solon.

5 Van Alfen 2012, 90.

6 Kroll 1981, 15; Nicolet-Pierre 1983.

7 Price, Waggoner 1975, 64.

8 Kroll 1981, 20–30.

9 Frier, Kehoe 2007, 117–119.

Athenian Owls had existed since the 6th century and by the next century were in widespread use as the currency of choice for trade throughout the Aegean basin. Such was the success of this Owl coinage that 'by the end of the fifth century owls seem to have become the coins most commonly employed for storing surplus wealth in the east Mediterranean.'[10] Though seemingly 'counter-intuitive' for many classicists and political scientists, the ubiquity of these Owls is positive proof of extensive regional economic integration (an enormous conglomeration of interdependent markets) because 'In the Greek case, where there was only ephemeral and incomplete political unification, solely market integration tended to favour and foster the predominance of one type of coin, most often that of Athens, the paramount commercial metropolis.'[11] Just like the US dollar in much of today's globalised economy, from the mid-5th century onwards, Athenian Owls became the reserve currency of the Aegean basin and beyond.[12]

In conventional economic analysis there are essentially two types of money: commodity money and fiduciary money.[13] In the case of ancient Athens, the presence of commodity money in the form of silver is overwhelming. Though cogently argued by Cohen, the acceptance of non-commodity Athenian money in the form of credit is not universally accepted within scholarship.[14] Finley's enduring contention, for instance, that Athenian money supply was inelastic had a preponderant influence on this aspect of classical scholarship. For two reasons Finley considered the supply of money in Athens to be inelastic. First, because 'money was hard coin, mostly silver, and a fair amount of that was hoarded, in strong-boxes, in the ground, often in banks as non-interest bearing deposits.'[15] Second, because in Cohen's view Finley insisted there were no banks in the modern sense in Athens, as 'the Athenian *trapezites* was a mere pawnbroker and money-changer.'[16] Based on these arguments, Finley makes the *ex-*

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10 Kraay 1964, 82.

11 Cottrell 2007, xviii.

12 Figueira 1998, especially chs 7: 'The Attic Mint and Monetary Output' and 18: 'Monetary Integration'. For the economic implications of this vast outflow of Athenian coinage see Flament 2007, 54–59.

13 Athenian coinage was commodity money in that its underlying value was defined by the intrinsic value of its silver content. Fiduciary money, e.g. cheques and bank drafts, is not legal tender and depends solely on confidence and trust that the underlying obligation will be met.

14 Cohen 2008, 66–83, makes a strong case for the existence of credit money in classical Athens.

15 Finley 1985a, 141.

16 Cohen 2008, 66.

cathedra pronouncement that 'the absence of credit-creating instruments and institutions remains as an unshaken foundation of the ancient economy'.[17]

Against this Cohen contends that Finley's 'dogma, however, is demonstrably untrue', arguing that the money supply of 4th century Athens was highly elastic because it could be increased through non-coinage credit created by banks and through credit made available by merchants.[18] The significance of the availability of credit finance (even on a modest scale) is of considerable importance for the financing of exchange transactions such as international maritime trade. Though repeatedly denied by the primitivists, there is significant evidence for the existence of fiduciary (bank or credit) money in Athens.[19] Cohen has argued that 'the deposit and credit mechanism of *trapezai* [were] an easy means of expanding its money supply.'[20] This was because those involved in commerce, and especially maritime traders, were extensive holders of bank accounts in which debts were settled not with coins, but through cashless book balancing entries: 'a ready means for converting bank deposits into "bank money"'.[21] Just as in modern economies banks in classical Athens added to the money supply through their lending of depositors' funds, however, the crucial difference between the two types of economies is the scale of these operations.[22] There is a widespread misconception that money in modern economies is created by governments: it is not. Only about 5% of the money circulating in contemporary economies is created by governments (coins and notes) with 95% created by private banks through their deposit and lending operations. Though unlikely to be entirely insignificant, we have no figures for the amount of 'bank' money generated in Athens,[23] but in any case, commodity money (silver coinage) was likely to have been the dominant form by far. Hence, our main focus in this discussion will be on commodity money.

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17 Finley 1985a, 198, 141. Finley also argued that under Greek law a sale was not legally valid until the sale price had been paid thereby preventing seller providing credit to buyers—vendor credit in modern parlance.

18 Cohen 2008, 66–67.

19 This absence of credit-creating institutions such as banks applied equally to the much later Roman period as to classical Athens.

20 Cohen 1992, 12; Millett 1991, 110; Sahlins 1965. Millett presents a completely contrasting analysis of the operations of banks in classical Athens to Cohen's modernist position. It is a substantivist view based on the anthropological theories of Sahlins' 'spectrum of reciprocities', and is also extensively indebted to Finley, his Cambridge mentor.

21 Cohen 2008, 80–81.

22 Mankiw 2010, 549–564. Banks create money by lending more than the value of their deposits, in modern banking it is referred to as fractional reserve banking.

23 Cohen 2008, 77, who concedes that a 'lack of statistical data precludes our exploring these issues systematically.'

Just like any commodity, money is governed by the rules of supply and demand. For Aristotle 'money has become by convention a sort of representative of demand, and this is why it has the name "money" (*nomisma*) because it exists not by nature but by law (*nomos*) and it is in our power to change it and make it useless' (Arist. *EN*, 5, 5.11). In this analysis of money Aristotle gives at least partial recognition to the reality of inflation by accepting that the value of money is not immutable: 'Now the same thing happens to money itself as to goods—it is not always worth the same; yet it tends to be steadier' (Arist. *EN*, 5, 5.11).[24] But unlike all other commodities, money has some unusual properties. The stock or quantity of money is of considerable significance as changes (increases or decreases) to the volume of money in circulation has important consequences for the operation of the whole economy: specifically, through its effect on prices. Thus, for purposes of assessing the Athenian naval economy it is the elasticity of the money supply in the form of commodity money, silver coinage, that is of interest.

In the long history of money, it is generally the case that commodities such as silver have been used as money because their relatively inelastic supply gives them an intrinsic value.[25] Athens was different, as Attica possessed substantial reserves of silver deposits in which Xenophon expressed himself 'confident that the ore will never give out and that silver will never lose its value.' (Xen. *Poroi* 4.11). As a monetary phenomenon, inflation is the rate of change of the general level of prices over time signalling a fall in the purchasing power of money. Throughout history, there have been periods of hyperinflation caused by grossly excessive expansion of a currency such as in Weimar Germany and contemporary Zimbabwe and Venezuela. Similarly, the vast importation of gold and silver by Spain in the 16th century had profound effects on prices, not only in Spain, but across Europe where prices rise by 600 % over 150 years.[26] But such extremely high bouts of inflation are unlikely to have occurred in an economy like Athens with a commodity-based money supply—letting the printing presses run is virtually costless, while mining silver is expensive, cumbersome and unpredictable.

One of the most important aspects of classical Athens' political economy, one that differentiated it from the rest of the Greek world, was its extensive

24 Schumpeter 1954, 59–61, who comments on Aristotle's analysis of money.

25 In contrast, token money which has no intrinsic value (paper) has negligible production costs compared to its purchasing power. Fiat money is similar in intrinsic value terms but gets its actual value from the guarantee of the issuing authority, usually, but not always a state.

26 Levack 2007, 96; Fischer 1996, 70.

silver deposits. The mining of silver had both economic and monetary consequences. Silver mining in the Laurion valleys 'represents by far the largest scale industrial production in classical Athens.'[27] Despite the fact that 'silver mining represented the speculative venture par excellence in fourth-century Athens',[28] it was a good example of 'how Athenians liked to invest their capital in productive enterprise.'[29] Indirectly, the monetary consequences were very significant and provide credible evidence for long-term increases in the provision of goods and services in Athens. As is made clear below, the output of Attic silver was considerable and led directly to an unprecedented increase in the money supply of Athens. Based on the standard supply-demand paradigm, this enormous increase in Athenian money supply should have given rise to too much money chasing too few goods—classic inflation.[30] The presence of inflation during the 4th century is noted by Gallo: 'La tendenza allo scambio e alla circolazione che, come e stato sottolineato, rappresenta una delle componenti fondamentali dell'economia greca … con gli inevitabili effetti inflazionistici che ne consequono.'[31] However, as Loomis has demonstrated, while there were some annual inflationary pressures with respect to labour and other factors between the 430s and the 330s, they were modest.[32] Even with wage inflation of 1% or less per annum he calculates that it would take about 70 years for wage rates to double, concluding that there was a 'very slight and gradual inflation during a long period of sustained prosperity and growth in the silver supply'.[33] This compares favourably with Rome from the Late Republic through to the second century Empire which with inflation of between 1% and 2% was deemed to have had stable prices.[34] The continuous low rate of Athenian inflation is an important indication that the increase in the supply of goods and services in

27 Rihll 2001, 115.
28 Christesen 2003, 53,39. In this important analysis Christesen states that 'the available information suggests that income-maximizing rationalism played an important role not only in shaping activity within specific spheres such as silver mining, but also in choices among various investment opportunities' before concluding that 'expressive rationality should be the base assumption in ancient economic history.'
29 Acton 2014, 116–117.
30 The obverse, a reduction in the amount of goods and services with no change in the amount of money in circulation, would have the same effect.
31 Gallo 1987, 61–62.
32 Loomis 1998, 240–250.
33 Loomis 1998, 247,257.
34 Temin 2013, 70; Howgego 1995, 116. The enormous inflation of the Late Empire was due to the massive currency debasement indulged in by the emperors. The antithesis of Athenian practice, which actively protected the integrity of its currency through legislation.

the city-state kept pace with the increased money supply. In other words, there was steady and continuous growth in Athenian GDP for most of our period.[35]

As a direct consequence of the surge in silver production, coinage in Athens underwent a tremendous expansion during the two decades from 510 to 490. The scale of the resultant monetisation was exceptional. The annual production of 736 talents of silver was transformed into over 4.2 million drachmas, consisting mainly of over 1 million tetradrachm denominated coins.[36] This was an enormous injection of liquidity into the economy and would have had similar effects to the 'quantitative easing' of modern times. Some of this increased money supply would have been used to purchase intermediate capital goods such as timber for ship construction, but much of it would have been spent on the purchase of labour for both infrastructure projects and for provisioning and paying sailors. The multiplier effect of this increased expenditure would also have had positive knock-on effects, boosting domestic demand and enhancing overall economic growth. In the absence of increased production of goods and services an increase in the money supply on this scale would have resulted in runaway inflation. As we have seen, there is no evidence that Athenian prices rose rapidly at this time so we can reasonably conclude that the increased consumption capacity was met by a concomitant increase in the supply of goods and services—in other words, there was significant economic growth. A large part of the expanded money supply resulting from increased silver production was expended on operating and maintaining its elaborate naval infrastructure and fleet, creating a virtuous economic circle within the political economy of Athens.[37]

In terms of fostering economic activity, transaction costs relate to the expected *ex ante* and *ex post* outcomes for agents entering into contracting or bargaining arrangements. The lowering of transaction costs increases the profitability of doing business and so is likely to lead to an increase in business transactions: contributing directly to increased productivity. There is clear evidence that some key Athenian decrees had specific commercial objectives of lowering transaction costs—the decree regulating silver coinage is a case in

35 It is worth noting that modern central banks, including the ECB, have an annual inflation rate of 2% as one of their principal policy objectives.

36 Figueira 1998, 188. As with virtually all numbers and 'statistics' relating to ancient Athens, these figures have to be taken as approximations which are likely to reflect the orders of magnitude rather than precise quantities of coinage in circulation. This 'health warning' with respect to numbers should be kept in mind for all numerical statements based on ancient sources throughout the book. Also see n. 42 below. For further discussion of the question of ancient numbers see chapter 11, 'Size Matters'.

37 Further analysis of this demand-led economic growth is provided in chapter 12.

point.[38] In 375/4, on a motion by Nikophon, the existing legislation on silver currency underwent substantial revision. This is the so-called Law of Nikophon which specified the duties of coin-checkers in both the agora in Athens and at the Piraeus. It was a deliberate attempt to improve the institutional framework of coinage to facilitate market exchange by using direct government officials to assist in the reduction of transaction costs. The silver coinage legislation offers an interesting insight as to how Athens addressed public-action problems through institutional design.[39]

Coinage posed an inherent dilemma for both sides in any commercial transaction: how can the claimed precious metal content be verified to the mutual satisfaction of buyer and seller, without assaying each coin at every transaction? This information asymmetry increased transaction-costs and hindered trade. The institutional response to this dilemma provided for in this Athenian coinage regulation decree was a third-party state-backed insurance scheme to guarantee the quality of its currency including, pseudo-owls. The principal objective of the decree was to protect the reputation of Athenian silver coinage by reducing the incidence of fake or imitation coins being passed off as authentic. It was a self-conscious effort to protect the 'brand' of the Athenian Owl as a reliable low-transaction-cost medium of exchange.

Apart from its overall attempt at protecting the commercial integrity of the coinage, the second important objective of the decree was the extension of the verification mechanism beyond the Agora of central Athens to the port of Piraeus: from the zone primarily concerned with internal market exchange to the one principally concerned with international market exchange. The decree contained important transactional information for both domestic and foreign merchants trading in Athens: the silver content of the city's coinage was verifiably trustworthy.[40] So, rather than risk undermining merchants' confidence in its currency, the Athenian state was more than willing to absorb the costs of currency verification to avoid such a deleterious outcome. It is positive proof that the Athenian polis was very solicitous of the integrity of the money supply of Athens and its empire. They may not have had a theory of money, but the classical Athenians had a practical, instinctive understanding of the principle of Gresham's Law that 'bad money drives out good'. It is also significant that in managing their money supply the Athenians never resorted to currency debasement, the standard method in which ancient states sometimes sought

38 Ober 2008, 214–220.

39 Engen 2005, 359–381, contains a thorough treatment of this decree.

40 Ober 2008, 225–233.

to meet their expenditures when faced with cash shortages: a practice to which the Roman Republic regularly resorted, destroying the credibility of its currency in the process.[41]

Despite its significance, however, attempts to quantify the size of the Athenian money supply is a hazardous task due to lack of data. But some estimates can be arrived at on the basis of a ratio of coins to dies which de Callataÿ proposes as 20,000 per obverse die.[42] Even though this is clearly 'an order of magnitude' figure, its value for ancient economic history is important, 'permettent des appréciations quantitatives de première importance pour l' historien de l' économie et des échanges.'[43] The most recent estimate of 200,000 obverse dies engraved in the Greek world (including the Hellenistic period), based on this average production of 20,000 coins per die, means that around 4 billion coins were produced.[44] While the scale of the Athenian monetary phenomenon was undoubtedly considerable, it must be recognised that there is a fundamental lacuna in our evidence for the silver output of Laurion, and even Conophagos' figure of 736 talents annually is considered by Figueira to be a 'frail calculation'.[45]

According to Conophagos, average-peak silver production in Athens was 20 tonnes per annum, amounting to 736 talents.[46] There are three principal reasons for this increased silver production: increased investment, new technology and improved security. To be profitable, mining operations at Laurion had to achieve economies of scale and so required considerable investment of both capital and labour. Because of the relatively low ore content, new smelting technologies were required for profitability.[47] The state, in this case the Peisistratid regime, provided the requisite levels of security within which such large capital investments could be undertaken with confidence, a fact recognised by Xenophon (Poroi, 4.43; 4.49; 5.1). In any event, the production of archaic Athenian coinage grew apace. Tremendous amounts of silver were produced and coinage production reached a new height immediately prior to the Persian wars in order to meet military expenses of that conflict.[48] This bonanza of mining and minting, which coincided with the Themistoclean naval expan-

41 Olivia 2007, 9.
42 de Callataÿ 2011, 9 readily accepts this is an approximation the purpose of which 'is to circumscribe the uncertainty to an acceptable level.'
43 Sartre 2002, 188. Quoted in de Callataÿ 2011, 13.
44 de Callataÿ 2011, 22 n. 43.
45 Figueira 1998, 185.
46 Conophagos 1980, 138–152, 341–354.
47 Davis 2014, 262.
48 Kroll, Waggoner 1984, 329.

sion, engendered a significant increase in money supply, 'representing one of the most intensive periods of minting in the history of Greek coinage.'[49] Based on de Callataÿ's ratio of 20,000 coins per obverse die for silver coinage, Kroll concludes that during the 490s and 480s Owl coins 'were being produced in staggering quantities', which he estimates 'would give a total of more than five million tetradrachms, amounting to over 3,600 talents of coined silver.'[50]

As already discussed, commencing with Peisistratus' tyranny there is a clear association between the advent of coined money and military expenditure. A connection that, as we have seen, became more pronounced during the Themistoclean naval expansion when Athenian money supply had become exclusively dependent on Laurion silver production.[51] The close link between specie and military pay is confirmed by a leading numismatist, de Callataÿ: 'Coins were struck to face state expenditures and the agenda for these expenditures was heavily dictated by military purposes.'[52] From the last decade of the 6th century onwards, the output of the Athenian mint was integrally linked to the output of the Laurion mines which reached a peak production during the Pentecontaetia.[53] The importance of Laurion silver and its association with the naval victory at Salamis was given dramatic validation in Aeschylus' *Persai*, when, in response to Queen Atossa's enquiry about the extent of Athenian wealth the chorus responded, 'Some fountain of silver there is for them, a subterranean treasury.' (Aesch. *Pers.* 237–238).

With the transfer of the Delian league treasury to Athens in 454, there was an enormous increase in money supply which continued to the end of the Peloponnesian war. During this time coinage production in Athens reached unprecedented proportions 'consisting of hundreds of millions of coins on a conservative estimate'.[54] Part of the reason that Athenian Owls became the universal currency of the Aegean is that many of the allied mints ceased production.[55] As a result of this 'colossal flood of coinage … the owl became the *nomisma koinon* of their Aegean *arche* as other coinages were overwhelmed and drowned out.'[56] With access to the Laurion mines critical for its silver

49 Price, Waggoner, 1975, 63.
50 Kroll, 2009, 196.
51 The transition from Thracian to Laurion silver is thought to have occurred around 515 when the Persian conquest of Thrace deprived Athens of access to Pangaion silver mines (Hdt. 5.11; 5.23).
52 de Callataÿ 2011, 17.
53 Figueira 1998, 184.
54 Van Alfen 2012, 93.
55 See Figueira 1998, chapter 2 for a discussion.
56 Van Alfen 2011, 127.

coinage supply, the Spartan occupation of Decelea and the escape of Laurion's slave labour force, caused severe disruption and forced Athens to issue emergency coinage in the form of silver-plated bronze coins.[57] For the first time Athens had to resort to the expedient of a token currency in order to conserve its silver coins for war expenditure.[58] Following the Sicilian disaster and the shift in the naval war to the eastern Aegean, the Athenians were also forced to use their remaining reserves of 1,000 silver talents for ongoing naval operations.[59] In the wake of its defeat in the Peloponnesian war, Athens did not mint coins on the same scale during the first half of the 4th century as they had done in the 5th.[60] Under the leadership of Eubulus (355–342) there were major fiscal reforms, including the introduction of bronze token fractions.[61]

As this brief discussion indicates, there was a consistent association between the growth and expansion of Athenian coinage and the parallel development and consolidation of the naval economy. However, despite the undoubted criticality of coinage in military and naval affairs, it is important not to overlook the more widespread use and importance of coinage in the myriad of market exchanges that took place daily throughout Athens and her *archē*. As an institution therefore, Athenian silver coinage should be considered 'as the common monetary instrument whose production, dissemination and use were not activities that favoured political over commercial power, or vice versa, but the means that simultaneously strengthened Athens' wealth and supremacy in both domains.'[62] In this respect, coinage was one of the seminal institutions of the late archaic transition which, in combination with some others, ushered in a sustained period of unprecedented economic efflorescence in the political economy of classical Athens.

2 Trireme Costs and Lifespan

Before dealing with the question of the capital costs of trireme construction, we must consider an important related issue: the average lifespan of a trireme. Several factors had a direct bearing on this including, the standard of craftsmanship and the quality of the timber used in the construction. Unless the timber

57 Van Alfen 2012, 95.
58 Flament 2007, 118–120.
59 Kroll, 2009, 199.
60 Van Alfen 2012, 96.
61 Van Alfen 2012, 96.
62 Kroll, 2009, 205.

had been seasoned for several years in advance of construction, a trireme's hull planking could swell and crack severely, compromising both the vessel's combat effectiveness and its lifespan.[63] From as far back as the work of Kolbe and Keil, the prevailing view among modern scholars is that the effective lifespan of a trireme was 20 years.[64] The most comprehensive and convincing modern treatment of this question is provided by Blackman who concludes that the average 'natural life' of a trireme was more than 20 years but, allowing for the exigencies of battle, weather and wear and tear, the average actual life was 'rather less than 20'.[65]

On these figures, Athens would have been able to maintain an average fleet size of 300 triremes with an annual construction programme of approximately 20 ships per annum, a policy which Diodorus claims actually existed (Diod. 11.43.3). However, this is unlikely to have been adhered to rigidly for our whole period, as losses in battles alone would, from time to time, require much higher rates of trireme construction to maintain fleet size. This lends credence to Aristotle's suggestion that the demos decided to fix the number of ships to be built each year (*Ath. Pol.* 46.1), for which further support is found in Demosthenes' claim that, in 356 the Boule failed to carry out its obligation to build its quota of ships (Dem. 22.8–22). Because much of this evidence for a fixed quota of 20 triremes is less than definitive, Jordan goes too far in claiming that 'throughout the century the assembly continued to vote twenty ships per year for the Athenian fleet, in addition to the number of ships already in commission'.[66] A more likely policy is that the Assembly decided each year on the number of ships to be built in the light actual losses and gains (captured ships[67]), and in line with expected needs and available resources.[68] Aristotle's allusion to a demos-controlled trireme construction regime also provides us with valuable insights into the administrative procedures which Athens used to manage its naval resources:

> The Council also inspects triremes after construction, and their rigging, and the naval sheds, and has new triremes or quadriremes, whichever the

63 Morrison, Coates 1986, 180–183. According to Meiggs 1982, 125, seasoning timber properly for use in trireme construction was a two-year process. This would raise further doubts regarding the feasibility of a large-scale trireme construction programme in 483.

64 Kolbe 1901, 377–418; Keil 1902, 201–204; Casson 1971, 90.

65 Blackman 1969, 215.

66 Jordan 1972, 22.

67 There is considerable evidence for captured ships: Thuc. 2.103.1, 3.50, 4.16.1, 8.19.3; *IG* II^2 1606, 1607, 1610.23–24.

68 Gabrielsen 1994, 135–136.

demos votes for, built and rigged, and naval sheds built; but naval architects are elected by the demos. If the outgoing Council does not hand over these works completed to the new Council, the members cannot draw their honorarium, which is payable when the next Council is in office. For the building of triremes, it elects ten of its own members as trireme producers.

Ath. Pol. 46.1

ἐπιμελεῖται δὲ καὶ τῶν πεποιημένων τριήρων καὶ τῶν σκευῶν καὶ τῶν νεωσοίκων, καὶ ποιεῖται καινὰς δὲ τριήρεις ἢ τετρήρεις, ὁποτέρας ἂν ὁ δῆμος χειροτονήσῃ, καὶ σκεύη ταύταις καὶ νεωσοίκους· χειροτονεῖ δ᾽ ἀρχιτέκτονας ὁ δῆμος ἐπὶ τὰς ναῦς. ἂν δὲ μὴ παραδῶσιν ἐξειργασμένα ταῦτα τῇ νέᾳ βουλῇ, τὴν δωρεὰν οὐκ ἔστιν αὐτοῖς λαβεῖν· ἐπὶ γὰρ τῆς ὕστερον βουλῆς λαμβάνουσιν. ποιεῖται δὲ τὰς τριήρεις δέκα ἄνδρας ἐξ αὑτῆς ἑλομένη τριηροποιούς.

Though no single source evidence exists for the actual cost of building a trireme, we can piece together sufficient evidence from a variety of sources to arrive at an acceptable estimate. Aristotle provides the first real suggestion that a trireme costs one talent to build when he says that the silver strike at the mines at Maronea yielded 'the state a profit of a hundred talents', which Themistocles used 'to get a fleet of a hundred triremes built' (*Ath. Pol.* 22.7). Important epigraphical evidence also points in the same direction: having provided the trierarch with the hull the polis held him accountable for its return to the dockyards in a seaworthy condition failing which he was subjected to a fine of 5,000 drachmae (*IG* II^2 1629. 475; *IG* II^2 1623.6–13). Subsequently, based primarily on Böckh,[69] it has become widely accepted within modern scholarship that the actual cost of constructing a trireme was one talent.[70] A more up-to-date and detailed analysis of trireme construction has been carried out by Clark. For his calculations he has estimated fir and oak timber quantities of 2,400 and 165 cubic feet respectively, and daily labour rates from the 5th through the end of the 4th century ranging from 3, 6 to 12 obols. On this basis, Clark has concluded that the cost of building a trireme was 6,300 drachmae[71]—a figure very close to the 1 talent suggested by our ancient sources and accepted by most modern commentators.[72]

69 Böckh 1886, 154–155.

70 Labarbe 1957, 44 n. 2; Blackman 1969, 184; Eddy 1968, 189.

71 Clark 1993, 193–196.

72 Gabrielsen 1994, 142, is sceptical that it is possible to arrive at any figure for the cost of a trireme in either the 5th or 4th century: 'there may be no such thing as the "standard cost"

The hull was undoubtedly the most significant element of the vessel in terms of size, weight, and cost, but a trireme needed other essential equipment (σκεύη) to be operationally effective. According to the details provided in the Naval Records there were over 20 distinct types of equipment divided into two broad categories: wooden gear (σκεύη ξύλινα) and hanging gear (σκεύη κρεμαστά, *IG* II^2 1629.1050). The principal items of wooden gear, were: 170 oars, 30 spare oars, and 2 rudders, 2 ladders, masts—main and small mast, sailyards big and small.[73] Of all these items of equipment, the most critical, and coincidently the most expensive, were the girding-ropes, the sails, and the oars: the raw materials for the latter two had to be sourced abroad, Macedon and Egypt, respectively. It is also interesting to note that from the detailed discussion of the costs of equipment provided by Clark, the average price for a new set of both wooden and hanging gear during the 4th century was 2,100 drachmae.[74] Unlike the hull which had a life-span of two decades, the wooden and hanging gear was subject to sever wear and tear, and had to be replaced regularly, in whole or in part. The Superintendents kept meticulous track of this gear with the Naval Records detailing what gear had been assigned to identified trierarchs (*IG* II^2 1627). The replacement of any of this damaged trireme gear was the responsibility of the trierarch and, as evidence from the Orators confirms, it was the subject of considerable disagreement and dissention among trierarchs, often culminating is legal cases (*Dem.* 47.19–22).

3 Trireme Timber and Naval Procurement

The strategic importance of natural resources and access to raw materials helped shape the foreign policies of empires throughout the ages the Athenian Empire was no exception. In the transformation of the Delian League into the Athenian Empire, the role played by Athens' need for natural resources has not been given its adequate recognition in traditional scholarship's treatment of this important transition.[75]

Timber was an essential commodity in the ancient political economy. Forest and forest products were vital sources of military materials throughout the

of a trieres'. However, he does not seem to be aware of the detailed analysis of this issue done by Clark for his unpublished 1993 thesis.

73 Morrison and Williams 1968, 289–294; Gabrielsen 1994, 227.

74 Clark 1993, 208–225.

75 de Ste Croix 1972, 46–49; Davies 1993, 46–47, who draw attention to the importance of resources for Athens, are exceptions in this respect.

Mediterranean for millennia.[76] For states with naval ambitions satisfying the timber needs of the fleet was an active policy preoccupation for polities as diverse as Pharaonic Egypt and the leading maritime powers of pre-Modern Europe. Even within the maritime sphere, naval timber as well as by-products such as tar and pitch, had competing uses in the construction of merchant vessels.[77] In Athens, the demands of the expanding industries of mining and shipbuilding, in combination with domestic requirements, had exhausted the local supplies of timber from nearby Aegaleus and Hymettus mountains.[78] Certainly by the 5th century, the capability of either Attica or neighbouring Euboea to satisfy Athenian shipbuilding needs would have been negligible. Apart from the quality, the quantities of timber needed to fabricate a trireme were also substantial. Calculations based on the reconstruction of the *Olympias* indicate that the hull alone weighed 15 tonnes, and when all the other timber components were included, such as the outrigger, seats and decks, it came to 25 tonnes.[79] To produce 25 tonnes of finished wood, it has been estimated that the quantity of raw timber logs required would be 35 tonnes.[80] The 200 oars weighed between 1,400 and 2,000 kgs. and so would have required 2–3 tonnes of timber logs.[81] Given the scale of these requirements, Athens was forced to look beyond Attica for supplies of these and other naval raw materials.

Athens had a long-standing interest in the resource-rich regions of the northern Aegean from as early as the 6th century, as indicated by both Peisistratus establishing a base there (Hdt. 1.64) and Miltiades' control of the Thracian Chersonese. The silver deposits of the region were undoubtedly an initial attraction, but the early 5th century discovery of rich veins of silver in southern Attica saw the emphasis shift to other resources. It was timber and grain that became the perennial preoccupations of the naval economy of Athens from the 5th century onwards.[82] The Themistoclean naval expansion created an enormous and ongoing demand for ship-timber, a strategic resource in which Attica was singularly lacking (Hdt. 8.136.1).[83] From the late 6th century the

76 Thirgood 1981.
77 Connan, Nissenbaum 2003, 710–719.
78 Thommen 2012, 37–40.
79 Morrison et al. 2000, 210.
80 Steffy 1985, 36. Ships timber is assumed to have been transported in log form as ship construction from pre-fabricated parts is not considered likely at this time.
81 Bissa 2009, 108.
82 Bissa 2009, 105–152.
83 As Plato's Critias says, 'There is no fir to speak of, nor pine, and but little cypress; nor could one find much larch or plane, which shipwrights are always obliged to use for the interior fittings of ships.' (Plato, *Laws*, 705c).

mountains of Macedon whose forests produced an abundance of high-quality naval timber (Theophr. *H.P.* 1.9.2; 4.55; 5.2.1; 7.1–3) soon became a focus of Athenian military and diplomatic efforts to secure supplies of this vital raw material (Hdt. 5.23.2)[84] Similarly, access to the grain producing region of the Black Sea acquired the status of a vital national interest which, by the 5th century, had become a foreign policy priority.[85]

Despite its strategic importance for the Athenian hegemonic thalassocracy founded on a trireme navy, references in our literary sources as to where Athens sourced its naval timber are few, and mainly incidental. While arguments from silence are hazardous, throughout our period, and even at times of intense political and military turmoil, we never hear of the inability of Athens to source vital supplies of naval timber. Undoubtedly, short-term supply difficulties arose from time to time, but Athens seems to have had no fundamental difficulty in regularly building and maintaining trireme fleets of 200 or more vessels.

Even for the celebrated trireme construction programme of the late 480s under Themistocles, we are given no indication as to where the ships were built or where the enormous quantities of timber materials came from. Meiggs' solution to this conundrum is that the timber was sourced in the west, especially Italy, because the most obvious alternative sources were Macedonia and Thrace which were under Persian control at the time.[86] As to where these triremes were constructed, Meiggs speculates; 'Perhaps the majority of the triremes were built on the long faintly sloping sand-shore of Phaleron bay.'[87] Though a plausible solution to the paradox of how a state with supposedly little experience in largescale shipbuilding construction could rapidly build 200 triremes, unfortunately, it lacks any source evidence and is therefore little more than scholarly speculation.

Theophrastos confirms that particular species of timber were necessary for trireme construction: 'in general, silver-fir, fir and cedar are used for shipbuilding. Triremes and longships are made from silver-fir because it is light, while

84 Borza 1987, 34, 42–43. During the 70-year period from 480 to 410 Borza estimates that Athens built a total of 1,500 triremes, necessitating the production of up to 300,000 oars.

85 Garnsey 1988, 117–144. Athenian dependence on imported grain is a matter of ongoing academic controversy but even Garnsey, who argues the case for less dependency, does not suggest that Athens was ever self-sufficient in grain production. More importantly, Sallares and Whitby argue for a bi-annual fallow system which would give an Attic grain production capacity less that that proposed by Garnsey. Sallares 1991, 381–386; Whitby 1998, 114–115. By the end of the 5th century Athens was dependent on imported grain, without which it could not survive for long (Xen. *Hell.* 2.2.10).

86 Meiggs 1982, 125.

87 Meiggs 1982, 122.

the round ships are made of fir because it does not decay. Sometimes triremes are also made of fir when they cannot get silver-fir' (Theophr. *Hist. Plant.* 5.7.1). It is striking that, during the late 6th and early 5th centuries, none of the leading naval powers of Greece had native timber resources suitable for building triremes.[88]

In addition to particular types of timber, trireme construction also had specific design requirements for both hull planking and oars. Very long single planks with minimum blemishes by way of notches were essential for hull planking to withstand the stresses and strains of both wave motion and ramming impacts. The length of the timber was not just an issue for the hulls, at 4 m in length the oars also required long lengths of unblemished timber. To withstand the considerable fulcrum stresses of trireme manoeuvres oars needed to be shaped from a single length of timber.[89] To achieve these important length requirements with minimum flaws or notches in the wood, the timber had to be grown at altitudes of over 800 metres.[90] The number of regions in the Mediterranean capable of producing timber to this specification was limited, as Theophrastos makes clear: 'It is a narrow space, which produces shipbuilding timber. In Europe, it is found in Macedon and in parts of Thrace and Italy …' (Theophr. *Hist. Plant.* 4.5.5). Marine quality timber was only available in particular climatic and soil conditions which permitted the trees to grow not only to a considerable height, but at a steady rate in order to avoid creating notches or other blemishes. For these reasons, the mountains of Macedon and parts of Thrace became of primary focus for Athenian shipbuilding requirements.

The importance of these north Aegean timber resources was recognised by the Persians as early as 510, as an exchange between Megabazus and Darius illustrates: 'Sire, what is this that you have done? You have permitted a clever and cunning Greek to build a city in Thrace, where there are abundant forests for shipbuilding, and much wood for oars' (Hdt. 5.23). With trireme navies expanding throughout the Aegean, Athens found herself in intense competition for access to these prized forest locations. Xenophon highlights the importance of Macedonia as the main source of Athenian timber by having Jason of Pherae, the tyrant of Thessaly, declare that, 'With Macedonia in our possession, the place where the Athenians get their timber, we shall of course be able to build far more ships than they' (Xen. *Hell.*6.1.11). The importance of the region as a source of naval timber for Athens is also made clear by Thucydides when, following the takeover of their colony at Amphipolis on the mouth of

88 Bissa 2009, 112.
89 Morrison et al. 2000, 171.
90 Meiggs 1982, 119.

the river Strymon in 424, he says, 'The Athenians were greatly alarmed by the capture Amphipolis. The chief reason was that the city was useful to them for the importation of timber for shipbuilding' (Thuc. 4.108).

In an era when naval power based on triremes determined the fate of city-states across the Aegean basin, it is difficult to overstate the strategic importance of naval timber or the intense inter-poleis competition that access to this scarce and indispensable raw material engendered. Paul Millett underlines the centrality of Macedonia's role in the Aegean naval timber trade with an apposite modern analogy: 'In this confrontation of a scarce, natural resource by insistent, external demand, ancient Macedonia might resemble the modern Middle East, with its oil reserves so desperately sought after by the industrial West. The analogy may be pressed further in the light of the ongoing involvement of Athenians and others with their repeated colonial, diplomatic and military interventions in Macedonia and its environs.'[91]

In pursuit of its quest for empire, Athens devised rational and effective administrative and political institutions which were both novel and unique. It was a process which had commenced towards the end of the latter half of the 6th century and quickly gathered pace in the subsequent decades, as indicated by de Souza who concludes that, '… in the second half of the sixth century … the move towards thalassocracy begins'.[92] Assessing the effectiveness of Athenian behaviour in securing her sources of timber by comparing outcomes with policy intent is nigh impossible for lack of quantitative data. This dearth of statistical data-sets should not be used, however, to advance the argument that the opposite holds true: that Athens had no such policies. On the contrary, there is significant evidence that Athens sought to secure its sources of naval timber supplies through both military and diplomatic means:[93] both rational responses in the context of its overall strategy of naval conquest. Later maritime superpowers such as Venice, Genoa, the Dutch Republic, Spain, France and Britain all faced similar difficulties in gaining access to ship-timber, and so devised not dissimilar policy responses, routinely engaging in war and diplomacy to advance their naval interests.

During the 5th century the concept of population transplantation received formal recognition in the institution of cleruchy (lot-holder). As discussed in detail in chapter 7, cleruchy was a particular Athenian institutional innovation which essentially created the concept of Attica *outre-mer*. Greek colonies created during the so-called colonisation movement in previous centuries

91 Millett 2010, 484.

92 De Souza 1998, 287, gives a clear exposition of the concept of thalassocracy.

93 Meiggs 1982, 126–131.

had clear affinities with their associated mother-city, but remained politically independent. Athenian cleruchies were fundamentally different; the settlers (cleruchs) retained their Athenian citizenship and the newly occupied territory remained a political and military dependency of Athens. The early Greek colonisation movement was inspired by many factors and as current scholarship argues, was largely private rather than polis organised, but Athenian cleruchies were conceptually different being polis sponsored and economically inspired, often with the objective to secure access to vital raw materials such as grain or timber or to protect the sea-lanes which carried them.

As is evident from the foregoing, Athens had a long-standing interest in the economic exploitation of the resource-rich regions of the north Aegean which pre-dated 480, what changed from that date onwards was that greatly augmented means were added to pre-existing motives. To safeguard the transportation routes to and from these economically important centres, Athens soon occupied the strategically important island of Skyros which was quickly followed by the occupation of Carystus on the southern tip of Euboea. With these conquests, Athens had full control of the commercially vital sea transit link between the Hellespont and Athens.

In regions where it did not exercise direct control Athens was not in a position to command the supply of naval materials, and so had to rely on a combination of trade and diplomacy to acquire them.[94] Having identified the locations of strategically important naval raw materials during the 6th century, Athens' early 5th century naval expansion and its concomitant vastly increased needs for naval materials necessitated even greater concentration on these resource-rich zones. Increased Athenian demand for ship-timber was the result of a change in both the type and number of warships. As discussed previously, the transition of the Athenian warship fleet from penteconter to trireme began in the last two decades of the 6th century, reflecting a process begun two decades earlier by some of the leading Aegean naval powers such as Polycrates of Samos (Hdt. 3.39.2, 3.44.2). Requiring 35 tonnes of raw log timber each, twice that of a penteconter, the transition to triremes would have doubled the raw timber log requirement per ship.[95] In combination with the expansion in the size of the Athenian fleet from 70 (20 triremes and 50 penteconters) in the late 6th century, this transition to 300 triremes for much of our period would have resulted in log timber imports increasing from 850 tonnes to 10,500 tonnes—a more than 12-fold increase.[96]

94 Davies 2013, 52.
95 This is a rough estimate.
96 The calculation is based on the 6th century fleet comprising the 20 Corinthian triremes

On a simple linear depreciation basis of 20 years per trireme, Athens would have needed to construct 15 triremes per annum just to maintain its fleet strength at or about 300. However, the big imponderable regarding actual Athenian trireme construction and its associated timber imports is the number of triremes lost through accidents, bad weather and, most significantly of all, in battle. To cater for these exigencies, especially the latter, Athens would have had to stockpile considerable quantities of seasoned timber, bronze for the rams, and very significant quantities of wooden and hanging gear. Procurement on this scale would have necessitated a major step-change. Not very long after its inception, many of the allies in the Delian League began to substitute monetary payments for the direct provision of ships, adding further pressure on the ship supplies acquisition logistics of Athens.

Coercion and, as we will see, the establishment of cleruchies were used by Athens to help secure strategically critical raw material supplies from as early as the late 6th century. Faced with even more pressing requirements for naval materials from the 5th century onwards, and recognising that coercion had its limits, Athens adopted a new approach which had two elements. First, the increased demand for timber and other naval supplies, especially in the face of simultaneous competition from other naval poleis for access to the same limited materials, forced Athens to secure exclusive access by concluding interstate agreements with the local ruling dynasts such as in Macedonia where these valuable resources were a royal possession.[97] Second, ever the innovator, Athens adapted the culturally sanctioned institution of *xenia* to further its pressing resource acquisition requirements. Granting honours and privileges to those who were considered to have performed exceptional trade-related activities on behalf of the city-state became an essential aspect of Athenian trade policy and was integral to its '"sylvan strategy" directed toward obtaining shipbuilding timber.'[98]

Though Alexander I of Macedonia (498–454/3) was a *proxenos* and *euergetes* of the Athenians in 479 (Hdt. 1.143.3), the region has been discounted as a source of Athenian timber for the Themistoclean naval expansion.[99] During the subsequent decades the Persians controlled much of the area from their garrison base at Eion. With the accession to the throne of Alexander's son, Perdikkas II (454/3–414/3), Athens would seem to have had access to Macedon timber as

acquired ready-built necessitating no log imports, and 50 penteconters each requiring 17 tonnes = 850 tonnes in total.

97 Meiggs 1982, 325–326; Borza 1987, 39.

98 Hughes 1983, 441.

99 Meiggs 1982, 123–125.

the new king was a friend of Athens (Thuc. 1.57.3).[100] Athens as a polis secured an exclusive arrangement with Perdikkas during the latter part of the 5th century, again relating specifically to trireme oars: 'and I will not export [oa]rs [to anyone] but an Athe[nian]'.[101] Despite this treaty, Athenian relations with Perdikkas broke down for a short period during his long reign, due largely to Athenian support for his younger brother Philip's attempt to overthrow him. In the meantime, Athenian interest in the region and its resources had shifted to the neighbouring areas of Thrace. By 454 Bisaltia and other cities had joined the Delian League and in 446 Pericles tightened Athens' grip on the area further by establishing a cleruchy at Bisaltia (Plut. *Per.* 11.5). Having made several previous attempts, in 437 Athens also gained a substantial base in the region with the establishment of a colony at Amphipolis from which it could exercise its long-held ambition of controlling the regions' raw materials, especially its timber (Th. 4.108.1).

At an important juncture in the Peloponnesian War, the Spartan capture of Amphipolis in 424 forced Athens into an even greater reliance on Macedonia for its ship-timber. It was only with the accession to the throne in 413 of Perdikkas' son, Archelaos, that Athens could reliably depend on Macedon for its naval timber. The evolution of Athenian trade policy, especially the change in emphasis from coercion to diplomacy, is discernible in its efforts to secure naval materials from Macedonia. The ongoing role of this region as a source of strategically vital raw materials such as gold, silver and timber for Athens is clear from the fact, that at a critical juncture in the Peloponnesian War, it became the focus of a concerted military campaign by the Spartans who saw it as way to undermine the Athenian war effort. In 424 Brasidas, Sparta's most formidable general, mounted a successful invasion with the objective of fomenting revolt amongst Athens' allies in the region, as a prelude to the conquest of Amphipolis.[102] According to Thucydides, the fall of Amphipolis to Sparta 'caused great alarm in Athens', one of the principal reasons for which was the city's value as a source 'for the timber it afforded for shipbuilding.' (Thuc. 4.108).[103] One of the incentives for Athenian willingness to sign the Peace of Nicias in 422 was the prospect of recovering Amphipolis, as one of its principal clauses stipulated 'the Spartans and their allies shall give back

100 Fox 2011, 90. A treaty between Athens and Perdikkas makes specific reference to Athens having exclusive access to Macedonian timber. See *IG* I^3 89, 1.31–23.

101 *IG* I^3 89.31 It has not been feasible to give a more precise date for this inscription.

102 Kallet-Marx 1993, 175–176.

103 We can take it that Thucydides' information with respect to Amphipolis is both accurate and credible. Thucydides was the commander held responsible for the fall of Amphipo-

Amphipolis to the Athenians.' (Thuc. 5.18.5). Despite its criticality to the Athenian naval economy, dynastic conflicts and constantly shifting local alliances meant that Macedonia was an inconsistent source of naval timber and its on-again off-again support for Athens continued to be a feature of its foreign relations well into the 4th century.[104]

Guest-friendship (ξενία), a form of reciprocal hospitality between a host and a foreign guest was an archaic institution with an elite-value pedigree. Proxenia was an important institution of interstate relations from the late 7th century right up to the Roman Imperial period, and apart from numerous literary references, there are over two and a half thousand proxenoi inscriptions. Proxenia grants provide a kind of barometer for the changing emphasis of key Athenian interests over time. In these inscriptions political and military services predominate, but from the end of the 5th century commercial and trade-related services begin to feature for the first time and within which the requirements for naval materials also becomes evident. While no consensus exists on whether the granting of proxenia were motivated by commercial considerations Marek, for example, argues against the then prevailing consensus that trade was a prominent reason for grants of proxenia. However, in more recent years, the role of trade has begun to acquire greater scholarly acceptance.[105] Thus, an institution that began as an accommodation between elite individuals in the archaic period was modified during the 5th century partly as a means to advance the collective needs of the democratic polis. Though proxenia decrees were initially related to military and political matters, new requirements demanded institutional adaptation by Athens to incorporate trade.[106] Athens began to bestow benefactions, both honorific and practical, on foreign individuals (referred to as proxenoi) who provided exceptional trade-related services.[107] The proxenos provided services to those who came to his polis on both public and private business: though Mack insists, 'almost all trade would have been resolutely considered a private affair.'[108] Mack therefore argues that this did not constitute an active trade policy on the part of the Athenian polis, 'except in that its members with interests in trade were aware of and successful in promoting them in the context of public assembly.'[109]

lis for which he was recalled to Athens and exiled (Thuc. 5.26.5). He thus 'had leisure to observe affairs somewhat particularly' and so wrote *The History of the Peloponnesian War*.

104 Psoma 2015, 4–6.

105 Marek 1984, 359, argues against trade being important while Burke 1992, 207 contends that it did facilitate commerce.

106 Engen 2010, 49.

107 Mack 2015, 64.

108 Mack 2015, 64.

109 Mack 2015, 64.

It was during the last decade of the Peloponnesian War that Athens first awarded proxenoi for services of a commercial nature.[110] From then on until just beyond the end of our period, a total of 11 decrees were granted for commercial services with six of these occurring during the period from 355 to 307, a time when twelve decrees were also granted for political or military services.[111] Due to the inadequacy of domestic production,[112] grain imports featured prominently as a reason for granting proxenia decrees, as did securing sufficient supplies of quality timber for its fleet.[113] In passing, it is also noteworthy that grants of the right to acquire land in Attica, which prior to the mid-4th century were only bestowed for political or military purposes, were now being granted for commercial services.[114]

Several inscriptions attest to the validity of the above arguments, with the Perdikkas decree mentioned earlier being particularly noteworthy.[115] King Perdikkas of Macedon provided trade-related services to Athens by swearing not to export timber for oar spars to anyone other than to the Athenians but, significantly, was not granted any honours or privileges in return for these services. The contrast with how Athens treated his son Archelaos, who succeeded Perdikkas as King of Macedon, for virtually identical naval material trade services could not have been greater. The Archelaos decree of 407 is quite specific in identifying the services that he rendered to Athens: Archelaos 'gave … ship's timber and oar spars to Athens.'[116] Additionally, at a time when the Athenian navy was significantly depleted following the Sicilian disaster, Archelaos permitted Athenian shipbuilders to come to Macedon to build ships (lines 26–38), instead of having to risk transporting valuable naval timber exports across the Aegean at a time when Athens was not in a position to provide adequate escort protection.[117] Around 410–407, Phanosthenes and Antiochides, who were citizens of Andros, were given honours for bringing oar spars to Athens and giving them to the τριηροποιοί (trireme builders).[118] Among the benefits bestowed on the two honorands was an exemption from having to pay the 1% Athenian

110 Woolmer 2016, 78.
111 Engen 2010, 152–155.
112 Garnsey 1985, 67–74.
113 Meiggs 1982, 121–123.
114 Bourke 1992, 209; Engen 2010, 159–160.
115 *IG* I^3 89.
116 *IG* I^3 117.
117 Engen 2010, 283.
118 *IG* I^3 182. The date of this decree has been much debated, but MacDonald's arguments for this date are convincing and are now generally accepted.

harbour tax: a substantial financial benefit for Phanosthenes whom, it is presumed, was a professional trader.[119]

Certain aspects of these three trade-related decrees are instructive with respect to the changing patter of Athenian trade policy. These decrees are amongst the earliest to be passed by the demos, and it is not coincidental that all three relate to the supply of critical naval timber requirements. The timing of the passing of the decrees is also of significance. The Perdikkas decree[120] is an interstate treaty between Macedon and Athens and represents a rapprochement following several periods of conflict stretching back to the mid 430s when rising tensions led to war (Thuc. 1.57). In 418 Perdikkas made an alliance with Sparta and refused to join in the campaign against the Chalcidians and Amphipolis, in response to which Athens blockaded Macedon (Thuc. 5.83.4). However, within three years Perdikkas was back on side, joining the Athenians in a failed attack on Amphipolis (Thuc. 6.7.3–4).[121] The decree gives a general commitment to assist Athens, but the most important clause in this treaty is the granting of an exclusive right to Athens to access Macedonian timber in which Perdikkas swears to sell oar spar timber only to the Athenians (line 23).[122] Yet, despite these extensive commitments on the part of Macedon, Athens offered Perdikkas nothing in return except a promise not to attack his kingdom. By the end of the Archidamian War (431–21), an ascendant Athens was largely in control of her empire and, having suffered no major defeats, her navy was intact and capable of mounting naval operations in theatres throughout the Aegean. A resurgent Athens had no need to offer concessions to secure her naval supplies: Perdikkas could be coerced and intimidated.[123] However, she had lost and failed to regain Amphipolis with its access to valuable naval timber (Thuc. 4.108.1).

Deprived of access to the timber resources of the Strymon valley because of the Spartan occupation of Amphipolis, Athens turned again to Macedonia for her requirements of naval timber. Unlike his father Perdikkas, Archelaus, who gained the throne in 413, was loyal to Athens, and not only sold naval timber but provided the Athenians with shipbuilding facilities.[124] Such was the extent and duration of these commercial arrangements that in 407 the Athenians passed a decree lauding Archelaus for his contribution to their naval

119 Engen 2010, 281–282. Because of difficulties in restoration it is thought likely but not known for sure if the honorands were made proxenoi.

120 Because of its fragmentary nature, the date of the Perdikkas decree is greatly disputed. However, most commentators place it prior to 414, the significant date for our purposes.

121 Rhodes 2010, 117–118.

122 Hoffmann 1975, 361.

123 MacDonald 1981, 144.

124 Psoma 2015, 9. There is both literary and epigraphic evidence that Athens not only im-

re-armament programme.[125] While a laudatory decree and proxenoi were a feature of this mutually beneficial trading relationship, at its heart it was a commercial arrangement from which the financial returns to Macedonia were substantial. Though he had not regained the mining areas of his kingdom lost by Perdikkas, Archelaus was able to mint a new issue of staters in large quantities, the silver for which 'could very well have been obtained through trade with the Athenians.'[126] It is a conclusion endorsed more forcefully in a recent detailed analysis of the importance of Macedonian timber trade by Selene Psoma. Having pointed out that Macedonia had no access to the silver wealth of the Mount Pangaeum district for a hundred-year period between 450 and 350, she states that Macedonia's 'only way to acquire silver was through trading its timber.'[127]

One of the objectives of the Sicilian expedition, as cited by Alcibiades, was the opportunity it afforded to build 'numerous triremes in addition to those we had already (timber being plentiful in Italy)' (Thuc. 6.90.3). Apart from the acquisition of additional revenue, a further strategic objective highlighted by Alcibiades for this campaign was access to Sicilian grain (Hdt. 6.90.4). Gaining access to vital grain supplies provided a positive impetus for Athens, but just as important was its corollary, the denial of access to its Spartan enemies, as the earlier Athenian intervention in Sicily (427) had sought to achieve; 'to prevent the exportation of Sicilian corn to the Peloponnesus' (Thuc. 3.86.4). In the famous debate between Alcibiades and Nicias before the Assembly vote on the Sicilian expedition, both stressed the significance of economic factors. Nicias tried to dissuade the demos by emphasising the scale and costs of the naval expeditionary force, if it were to be successful, and the fact that the Sicilians 'grow their grain at home instead of importing it.' (Thuc. 6,20.4). Alcibiades appealed to Athenian materialist interests, assuring them that like their forefathers they would gain empire 'depending solely on their superiority as sea.' (Thuc. 6.17.8). It was Alcibiades' appeal to their economic self-interest that won the day because, as Thucydides states, 'the idea of the common people and the soldiery was to earn wages at the moment, and make conquests that would supply a never-ending fund of pay for the future.' (Hdt. 6.24.3).

The destruction of the Athenian fleet in the disastrous Sicilian expedition of 413 ended her long-distance coercive capability. Despite the enormity of the defeat, the Athenians were 'determined to resist to the last, and to provide tim-

ported naval timber from the northern Aegean but also, on occasions, had ships build in the dockyards there and other parts of the Aegean such as southern Asia Minor, especially Cilicia.

125 Borza 1992, 163. For the decree see also *IG* 1^3 117.

126 Fox 2011, 164.

127 Psoma 2015, 6.

ber and money, and to equip a fleet as best they could' (Thuc. 8.1.3). In the wake of Sicily, Athens was no longer able to rely on coercion to secure vital commodities. In her efforts to re-build the Athenian fleet and quickly restore her imperial hegemony following Sicily, Athens was compelled to resort to offering concessions and special favours to gain essential commodity supplies such as naval timber and grain.[128] With the inauguration of the institution of proxenia, diplomacy replaced coercion as an instrument of Athenian trade policy. As the extant inscriptions attest, proxenia played an important role in facilitating Athenian naval trade during the 4th century.

4 Provisioning the Fleet—a Network of Markets

Ancient military leaders were acutely aware of the logistical importance of provisioning their forces. Land armies had baggage trains, and when supplies ran out they could rely on foraging as a last resort. But for navies that were comprised of squadrons of triremes with little on-board stowage space for food or water, the question arises as to how the naval commanders of the new Athenian fleet responded to the challenges of provisioning anything from 6,000 to 20,000 sailors in distant theatres of war, often for months at a time. As is evident from the scale of Athenian overseas naval operations for over a century and a half, this was a mammoth ongoing task to which, surprisingly, very little scholarly attention has been given to date. Whichever mechanism that was used had to work effectively, consistently, and repeatedly under varying conditions, because recurring failures of provisioning would have been, literally, a death blow to Athens' conquest strategy. While arguments from silence are generally regarded with considerable suspicion, in the absence of any source evidence to suggest that either reciprocity or redistribution were the main exchange mechanisms at work, we are forced, *faute de mieux*, to consider the only other possibility: market exchange.

The importance of providing for the food needs of an army is well summed up by the aphorism 'an army marches on its stomach'. The Persian army that invaded Greece in the early 5th century came equipped with enormous baggage trains. According to Herodotus' calculations, in 480 its large fighting force was outnumbered by 'the number of servants who followed the troops, as well as the men on light vessels that carried provisions' (Hdt. 7.186). Such was the size of the army and its camp followers that Herodotus marvelled at the scale of provisions that were required to feed it, which he estimated would require

128 Engen 2010, 321.

up to 110,340 *medimnoi* of wheat per day (Hdt. 7.187.1–2).[129] A common, and very effective military tactic, was to destroy the opposing forces' baggage train or cut off access to their supplies of food and water, as happened initially to the Greek army Plataea in 479 (Hdt. 9.50). Traditionally, armies on the move in the ancient and pre-modern world supplemented their food and ration provisions through a combination of plunder and pillage in enemy territory, and requisitioning in friendly or allied territory. As none of these options was available to it, the alimentary requirements of Athenian naval expeditions posed logistical difficulties of a quite different order of magnitude.

The difficulties associated with providing food for trireme crews arose from two basic facts. First, the primary motive power for triremes was the propulsion provided by the rowers, who required considerable amounts of food energy to sustain this strenuous activity. Second, as a dedicated warship, the trireme was designed as a long, light, and slender craft to deliver maximum manoeuvrability in contested battle-space and, when necessary, maximum speed for ramming; as a consequence on-board storage was minimal.[130] Unable either to stock adequate food and water supplies, or to cook for up to 200 sailors on board ship, triremes were drawn up on the shore at night to permit the crews acquire provisions and cook meals (Thuc. 8.101; Xen. *Hell.* 5.1.20).

The resultant logistical issues surrounding the centrality of providing adequate food supplies for naval and military operations are recorded in our source evidence from an early stage. In his attempt in 476 to finally defeat the Persians who had occupied Eion on the Strymon River, Cimon had first to defeat the nearby Thracian tribes who 'had been keeping the Persians supplied with provisions' (Plut. *Cim.* 7). During the assault on Cyprus in 451 in which they had laid siege to Citium but were subsequently forced to retire following the death of Cimon, 'and by scarcity of provisions.' (Thuc. 1.112.4). For large expeditions, such as the one to Sicily in 415, where markets in hostile territory would not be available to them, the Athenian fleet carried its own provisions on separate accompanying craft. In this instance, 'the supplies for this force were carried by 30 merchant ships laden with grain … and merchant ships which followed the armament voluntarily for purposes of trade.' (Thuc. 6.44).

129 Herodotus' calculations are based on one *choinix* (1 litre) of wheat per day being sufficient to meet the calorific requirements of soldiers and sailors (Hdt. 7.187.2).

130 Jordan, 1975, 107–108, cites Thucydides as proof that triremes had on-board storage for up to two months' provisions. The phrase Thucydides uses is 'launch the whole of our present navy with two months' provisions' (Thuc. 6.34.4). It was a common practice for provision supply ships to accompany a large fleet mobilisations.

As Thucydides' account of the Sicilian expedition illustrates, classical Athenian fleet commanders were aware of the close affinity between naval strategy and supply logistics with their potential to shape the conduct of naval operations and determine the outcome of battles. The long sea route to Sicily necessitated bringing along 30 merchant ships loaded with grain, which were supplemented by a further group of private merchant ships hoping to sell provisions to the sailors. En route, the Athenian fleet sought provisions and water from several Italian cities but they were refused entry, 'the cities shutting their markets and gates against them.' (Thuc. 6.44.2). Finally, at Rhegium, though refused entry to the city itself, they were allowed camp outside the walls where 'a market was also provided for them.' (Thuc. 6.44.3). The fact that Athenian sailors acquired their food through direct purchase in markets is taken for granted by Thucydides, as is clear from his many matter-of-fact references to such markets (Thuc. 1.62, 3.6.2).[131] The frequency with which Thucydides talks about markets indicates that both he and his audience took it for granted that the provisioning of Athenian fleets was done through markets provided by private traders. The exception, which proves the rule in this case, is the one recorded instance of the requisitioning of provisions by Athens to feed sailors which occured in the unusual circumstances of the Sicilian expedition.[132]

There is no evidence for a sustained or consistent Athenian policy of direct state-supported grain provision either for its civilian population or its military expeditions. In this context, it is also worth noting that Athens had no large central grain storage facilities. The Athenian Grain-Tax Law of 374/3 which states, 'The city will make available the Aiakeion covered and with a door', would seem to indicate that Athens did not provide regular public storage facilities for grain at this time.[133] Even when food crises did occur, it is claimed that Athens' efforts to control the availability of grain for the civilian population at times of shortages was done 'through private traders … in the markets.'[134] Apart from exceptional periods of acute shortages, when normal market conditions prevailed there was effective demand in the grain markets of Athens and Piraeus because Athenian sailors (of all classes) could pay for their food from the wages and subsistence allowances they received. As monetary pay for sailors had been

131 Strassler 2008, 36, n. 1.62.1b; 'Greek soldiers and sailors at this time were expected to purchase their food from local markets with their own money … For a city to offer a special market at a convenient location for foreign military personnel was a polite and presumably profitable amenity'.

132 O'Connor 2011, 147.

133 Rhodes, Osborne RO 26.

134 Curtis 2001, 278–279.

introduced from at least 480, the supply of provisions through market exchange was likely to have been a venerable and long-standing part of the institutional landscape.[135]

An analysis of the Athenian fleet operations for our period reveals that there were three broad types. First, long-distance overseas naval engagements involving large numbers of triremes and sailors such as those of Cyprus, Egypt (Thuc. 1.112) and Sicily (415), which on occasion involved lengthy sieges and blockades. Second, shorter range naval expeditions that varied from medium sized fleets of between 20 and 80 triremes to some larger squadrons such as the 100-trireme expedition led by Pericles around the Peloponnese whose military objectives were harassing enemy territory by causing maximum economic damage (Thuc. 3.7.2; Ps-Xen. *Ath. Pol.* 2.4). These were principally *periploi* which were regular features of both the first and the second Peloponnesian Wars. The early years of the Archidamian phase (431–421) of the Peloponnesian War proper (431–404) was a period of intense naval activity in which these periploi were both frequent and large (Thuc. 2.17.4., 2.23.2, 2.56.2). The third category, and representing by far the largest number of Athenian naval engagements that took place throughout our period, were those which spanned the wider Aegean basin. These varied considerably in size and duration, depending on their designated military objectives. These Aegean naval operations, whose overriding military objective was the hegemonic control of the Aegean Sea and its littoral regions, lay at the heart of Athens' strategy of conquest. These naval actions were centred on acquiring and maintaining territory in the northern Aegean regions through cleruchies, securing trade routes for vital materials such as grain and timber, and during the 5th century, suppressing rebellious Delian League allies. Here the logistical issues surrounding the provision of food supplies for the fleet differed significantly from those of either the large-scale overseas operations such as Sicily or the periploi of the Peloponnese.

The Athenians took the extraordinary decision to requisition boats to carry provisions for the Sicilian expedition for two reasons: the exceptionally large size of the expedition and the exceptionally long distance to Sicily: 'the longest passage from home hitherto attempted' (Thuc. 6.31.6). The unprecedented large number of hungry sailors, combined with uncertainties of supply en route, necessitated the direct provision of food supplies by the polis. The expedition needed to transport of its own grain in order to ensure its food security. The manner in which Athens achieved this is another indication of the exceptional nature of the Sicilian expedition. Though some private merchant ships

135 van Wees 2004, 237.

stocked with provisions did sail with fleet as was usually the case, on this occasion these private merchants were considered inadequate to cater for the needs of such a large fleet travelling such long-distances. To cater for these exceptional circumstances Athens, which had no merchant ships of its own, commandeered 30 private merchant ships and conscripted the bakers and millers needed to process the raw grain into flour and bread—a case of exceptional circumstances requiring exceptional measures. In all the naval expeditions mounted by Athens throughout the 5th and 4th centuries there is not a single other reference in our sources to the requisitioning of private merchant ships for purposes of providing food supplies. The Sicilian expedition is the exception which proves the rule that on every other location the Athenian fleet relied on the private provision of food for its crews through local markets on location, sometimes supplemented by private merchant ships accompanying the expedition. Confronted by similar logistical dilemmas regarding secure and adequate food supplies, reports of the even larger Athenian naval expeditions to both Cyprus and Egypt contain no references to private merchant ships having been commandeered for food provision purposes. The source evidence attests overwhelmingly, save for Sicily, that the vital alimentary needs of the Athenian fleet in all its operations were met by crew members purchasing their food for cash from private merchants accompanying the fleet or vendors in markets throughout the Aegean.

The precarious position of the Athenian navy's access to food supplies at Syracuse posed a fundamental question as to its capacity to continue. Provoked by dire straits in the last desperate stages of campaign in Sicily, there is a rare instance of Athenian sailors being forced to forage for fuel and water (Thuc. 7.13.2). As Nicias explains, the situation of the Athenians was so serious that if the Italian cities were to cease providing food supplies, 'Syracuse would finish the war without a blow.' (Thuc. 7.14.3). There are two further points regarding the Sicilian campaign which have implications for the existence and scope of markets. First, it is important to reiterate that the food provisions in the form of grain supplied by the Italian cities were not a form of tribute-in-kind paid by allies, this was a commercial undertaking done by merchants in search of profits. Second, with well over 30,000 military personnel to be fed the quantities of food involved were enormous—450,000 medimnoi of barley-flour per annum.[136] To put this in context, according to Demosthenes, the city of Athens annually imported a total of 800,000 medimnoi of grain to feed its population during the mid-4th century (Dem. 20.31–32). This scale of commercial grain

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136 O'Connor 2011, 110–111.

supply is further confirmation that a robust network of merchants existed who were actively involved through market exchange in provisioning the fleet. It is important evidence that the Athenian navy operated in a world of functioning markets.

In choosing an overnight resting location, whether a harbour or a beach, a prime consideration for naval commanders was the presence of a conveniently located market. Naval commanders who failed to give due consideration to these vital logistical issues courted disaster, which is precisely what happened at Aegospotami in 405. The Athenians beached their triremes at a location just over two kilometres from the nearest market and while many of the sailors were away shopping the Spartans attacked destroying as many as 160 Athenian triremes *in situ* (Xen. Hell. 2.1.25–28). Conon, the Athenian commander, managed to escape with just 9 ships (Diod. 13.106), but with the annihilation of her fleet at the Hellespont, Athens lay defenceless before Lysander's triumphant navy. Just a few months after Aegospotami, Athens capitulated bringing both the long-running Peloponnesian War, and the Athenian Empire, to an end. The greatest navy ever seen in the Mediterranean had suffered an ignominious defeat due to an egregious tactical miscalculation involving the provisioning of the crews.

The fact that trireme crews regularly acquired their essential food supplies from local markets was, on occasion, exploited tactically. Towards the end of the Sicilian conflict in 413 the Syracusan naval commanders had the city's magistrates transfer the market from the city centre to the harbour area, 'and oblige everyone to bring whatever edibles he had and sell them there, thus enabling the commanders to land the crews and dine at once close to the ships, and shortly afterwards, the self-same day, to attack the Athenians again when they were not expecting it.' (Thuc. 7.39). The implication of this passage is that on disembarkation trireme crews normally shopped in the market in town and ate in various locations around the city.[137] Through a similar ruse, the Athenians were outwitted in Eritrea in 411. Always reluctant Athenian allies, the Eritreans conspired with the Spartans to destroy an Athenian fleet which was moored in their harbour. They contrived that nothing was on sale in the agora, and so the Athenian sailors were forced to leave their ships to purchase food on the outskirts of the city. On a signal from the Eritreans the Spartans attacked the partially manned Athenian fleet and destroyed it (Thuc. 8.95.4). Soon after this Athens lost the whole of Euboea which, according to Thucydides, caused more alarm in Athens than the Sicilian disaster because Euboea 'was of more value to

137 Casson 1995, 262 n. 6.

them than Attica.' (Thuc. 8.96). On hearing of their defeat at Arginousae (406) the Spartan commander laying siege to Mytilene, according to Xenophon, pretended to his own forces that Sparta had been victorious in order to ensure an orderly withdrawal of his fleet to Chios. To make his deception as convincing as possible he ordered 'the traders to put their goods quietly aboard their ships and then set sail for Chios.' (Xen. *Hell.* 1.6.37).

The periploi targeting the Peloponnese were part of a coherent strategy by Pericles to destroy crops and property across the region in an attempt to wear down enemy resistance and divert Spartan forces from attacking Attica: these were naval raids with no intention of occupying territory. In subsequent years, while the intensity of the periploi were maintained the size of the individual expeditions, though still substantial, were reduced in scale (Thuc. 3.7.1, 3.9 1.1, 4.42.1). There was also some naval innovation during this period such as in 430 when we have the first recorded evidence of triremes being converted for use as horse transports (Thuc. 2.56.2). Thucydides gives little indication of the duration of these periploi, but given the variety of activities in which they were involved, from raiding to laying siege, it has been estimated that the time involved ranged from one to four months.[138] Immediately prior to embarking on such expeditions sailors purchased some essential food supplies in the markets of the Piraeus.[139] But with storage space on board triremes being exceedingly limited, such rations for the 200 strong crew would have lasted for a few days at most. Operating deep in enemy territory, purchasing their food requirements in local markets would not have been possible so for these periploi alternative arrangements would have been necessary.

To achieve their strategic purpose of raiding these periploi also needed to be highly mobile to maintain the essential tactical advantage of surprise. These, combined with restrictions of on-board food storage and access to local markets meant that periploi expeditions had little alternative for provisioning their crews except through merchant supply-ships which accompanied the fleet. In these respects, the fundamental differences between a land army and a naval expedition are explained by pseudo-Xenophon: a naval power is inherently more mobile and can 'sail as far as they like from their own country … ravage the lands of those more powerful than itself' as well as being more flexible because 'it is not possible to carry provisions for a long time if one travels on foot' (Ps-Xen. 2.5). The importance of merchant supply-ships for the success of Athenian naval raids on the Peloponnese can be gauged from an incident at the start of

138 Krentz 2007, 154.
139 van Wees 2004, 216.

the war when, as an act of revenge, the Spartans 'had killed and thrown into pits the Athenian and allied traders whom they had caught sailing around the Peloponnese in merchant ships' (Thuc. 2.67.4). The raiding nature of these attacks meant that foraging as a food source may not have been feasible. As plundering was not always reliable, given the given the numbers of men involved and the lack of trireme storage, the only reliable mechanism was through merchant supply-ships.[140]

In contrast with the Peloponnese, in the Aegean theatre of war the provisioning of the fleet operated somewhat differently. It was a difference expressly emphasised by Nicias who advised caution in advance of the Sicilian expedition, warning it would be completely different to the type of naval campaigns with which the Athenians were familiar, 'in Hellas (where) any additional supplies needed are easily drawn from friendly territory' (Thuc. 6.21.2). Many in Nicias' Assembly audience being experienced sailors of Aegean naval expeditions would have understood the import of his remarks. For purposes of this analysis, the key phrases to note are Nicias' references to 'additional supplies' and 'friendly territory'. From the context of these two terms we get a clear indication of the normal *modus operandi* of Athenian naval expeditions in the Aegean. They would have departed the Piraeus well-equipped with adequate food provisions carried by merchant supply-ships as an initial buffer supply until the theatre of operations was reached. Once *in situ* the merchants would source additional food supplies to sell to the crews from neighbouring friendly allies or the sailors could purchase food themselves in markets established in friendly territories. In either case, the primary mechanism of provisioning Aegean expeditions was through local markets with the supply-ships acting as an emergency reserve when, for whatever reason, the fleet could not get access to a local market.

In the wake of the disastrous defeat in Sicily, Athens' previously unassailable dominance of the Aegean began to crumble as more and more allies, particularly the Ionians, rebelled. The strategic balance of power in the region changed dramatically as Persia once again became involved in Greek affairs, this time by providing financial support for Sparta. At a time when Athens had lost considerable sources of current revenue due to revolts by the allies, this Persian financial intervention proved decisive.[141] Using these funds to build and man a substantial fleet for the first time, Sparta was able to compete on equal naval terms with Athens. This last phase of the Peloponnesian war, the

140 van Wees 2004, 63, claims otherwise: 'a fleet needed supplies on a massive scale, and the only way to obtain these in enemy territory was by force.'

141 Blamire 2001, 90–126.

so-called Ionian war, involved intense naval competition between Sparta and Athens with fleets on both sides being regularly over 100 triremes. This scale of naval engagements was replicated on several occasions during the 4th century.

During the mid-4th century source evidence indicates that Athens imported 800,000 *medimnoi* of grain per annum to meet the requirements of its population (Dem. 20.31–32).[142] This compares with figures derived by modern scholars who have concluded that on average the Athenian population required about 32,000 tons of grain per annum (985,212 *medimnoi*).[143] The control of her sources of grain and its supply routes, especially from the Black Sea through the Hellespont, was of immense strategic concern for Athens. A fact well understood by the Spartan naval commanders during the latter phases of the Ionian war when they stationed their navy there to menace Athenian grain ships. But the Hellespont was not Athens' sole geographical preoccupation with respect to grain supplies. During the early years of the Peloponnesian war, Athens had strategic concerns regarding the grain supplies of Sicily and their possible destination. Acting on these concerns it sent an expeditionary force to Sicily under the pretext of assisting the Leontines but whose real purpose, as Thucydides explains, was 'in reality to prevent the exportation of Sicilian grain to the Peloponnese and to test the possibility of bringing Sicily into subjugation' (Thuc. 3.86.4). As the principal source of sustenance for both its population and its navy, Athens considered grain a strategic commodity of the utmost importance. Yet, none of the principal scholars who have concerned themselves with aspects of the Athenian grain market has given any serious consideration to the impact which the provisioning of the navy would have had on this trade.[144] This is even more surprising when one considers the scale of these operations in terms of the numbers of ships and sailors involved.

As indicated above, large and medium scale naval expeditions were a regular occurrence throughout our period. But it is only when one begins to calculate the quantities of grain consumed by them that the sheer scale of the provisioning logistics become apparent. Following a very detailed analysis, O'Connor concludes that Herodotus' figure, of one *choinix* of wheat[145] per day, was

142 Because ancient authors did not distinguish between them, it is not possible to say how much of this was wheat and how much barley-meal. See O'Connor 114 n. 252.

143 Moreno 2007, 10. *Medimnoi* calculation based on 1016 kgs. per ton × 32,000 tons and 33kgs per *medimnos* of wheat.

144 These include; Garnsey 1985, 1992, 1999: Osborne 1987; Sallares 1991; Moreno 2007.

145 One *choinix* of wheat was considered the nutritional equivalent of two *choinoikes* of barley-meal, which is the form in which sailors in the classical period consumed their carbohydrates. (Xen. *Anab.* 1.5.6).

sufficient to meet the calorific needs of an average classical Greek sailor.[146] Using these figures, he has calculates that the grain consumption of the 30,000 (at least) combatants of the Sicilian fleet for one year amounted to just over 450,000 *medimnoi* of barley-flour, the wheat equivalent of 7,500 tons.[147] This is almost 25% of the total annual grain consumption of Athens (32,000 tons) as calculated by modern scholars.[148] The expedition lasted for almost 2 years and was mostly supplied during this whole period by grain from poleis in Sicily and Italy (Thuc. 7.14.3, 7.60.2). Some other long military encounters were sieges which also required exceptional provisioning. The siege of Samos involved 110 triremes for 9 months, and would have required 250,000 *medimnoi* of barley-meal (Thuc. 1.116–117). The siege at Potidaea from 432 to 430 had 17,000 combatants for the whole duration who would have required 640,000 *medimnoi* of barley-meal (Thuc. 1.64–65). The blockade of Mytilene, which lasted almost 9 months during 428/7, would have required 100,000 *medimnoi* of barley-meal (Thuc. 3.17.4). All of which serves to indicate that the orders of magnitude involved in provisioning large naval fleets and sieges were very significant, albeit intermittent.[149]

Naval provisioning on the scale suggested by these numbers was a very considerable logistical undertaking and was likely to be a perennial requirement for many naval expeditions throughout our period. Undoubtedly, foraging would have played some role in satisfying these requirements, but as a provisioning mechanism foraging had inherent limitations. In the main theatre of naval operations, the Aegean, the source evidence attests that allies and neutral poleis readily provided markets for the Athenian navy, so foraging was largely unnecessary. In the Peloponnese, on the other hand, Athenian naval raiding expeditions did engage in foraging as part of their policy of economic devastation, however, as discussed above, because of tactical considerations, it could only ever have played a minor role. Except in the case of the Sicilian expedition (the exception that proves the rule) our sources make no reference to requisitioning as a means of provisioning the navy.

As Moreno makes clear, the Athenian trade in grain was a functioning market in which 'price could vary widely depending on supply, demand, and quality, and it is thus very unlikely that any sort of "normal" or "customary" price

146 O'Connor 2011, 589–621.

147 O'Connor 2011, 113.

148 Moreno 2007, 10.

149 O'Connor 2011, 186. All the figures for barley-grain consumption and purchase as well as the numbers of military personnel in this paragraph are from O'Connor.

existed'.[150] This, combined with the fact that our sources constantly refer to markets in the context of naval provisioning, provides compelling evidence that Athenian sailors purchased their food supplies individually in markets or from accompanying merchant traders. The fact that the largescale provisioning requirements of this peripatetic amphibious customer-base could be satisfied routinely through use of Athenian Owls across the Aegean is impressive testimony as to the regional ubiquity of market exchange. The importance of markets as the primary mechanism of provisioning the fleet can also be seen in another critical sphere of the naval economy, the labour market in which mercenary sailors were also drawn from around the Aegean.[151] All of this is evidence for the existence of the 'conglomeration of interdependent markets' explicitly denied by the primitivists. Shorn of this primitivist economic myopia, what is in evidence here is a de facto Aegean-wide free trade area based on a common currency, the Athenian Owl, in which goods (grain, for example) and services (mercenaries) moved freely and regularly in response to market pressures of supply and demand. As we shall see the operation of these local and regional market mechanisms, both within Athens and throughout the Aegean, had profound effects on both the performance and structure of the Athenian political economy.

150 Moreno 2007, 326. See also Bresson 2000, 183–210.

151 van Wees, 2004, 209, who states, 'Classical navies hired crews from all over Greece: many men appear to have made a living as itinerant rowers.'

CHAPTER 7

Naval Institutions—Trierarchy

1 The Rules of the Game

As discussed in chapter 2, institutions are 'the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction. Their importance lies in their ability to structure incentives in human exchange, whether political, social, or economic. Institutional change shapes the way societies evolve through time and hence is the key to understanding historical change.'[1] Much of human social interaction, including economic behaviour, is structured by both implicit and explicit 'rules of the game'. The prevailing formal and informal institutions in a society such as law, language, social mores, manners, and forms of organisation all help to structure social interactions and thus influence economic outcomes.[2] Understanding the particular institutional arrangements which serve to underpin the workings of an economy is essential to understanding political economic performance. The extent to which a society can implement institutional arrangements which align the returns to individuals with those of society is a critical determinant of economic growth.[3] Traditional economic models of economic growth for modern economies focus on explanatory variables such as capital accumulation, economies of scale and technology, but for pre-modern economies a focus on institutional arrangements may offer greater insights, especially in helping to identify the critical factors which contribute to economic growth.

The actual cost of running any system, including an economy, is greatly influenced by the degree to which it has political legitimacy. The formal rules by which a political economy operates need to be complemented by a societally accepted system of moral rules and mores—the more widespread the legitimacy, the less 'policing' is required and therefore the less costly the system is to operate. This is particularly the case when it comes to the state provision of public goods because of the issue of free-riding (see below). For a political economy such as classical Athens, where defence spending constituted the single largest component of public expenditure, the cost of funding the state's provision of defence—a public good par excellence—is inordinately affected by

1 North 1990, 3.
2 Hodgson 2006, 2.
3 Myhrman, Weingast 1994, 188–189.

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the issue of free-riding. The operational effectiveness of the Athenian institutions which were designed to fund, provision and operate its navy is therefore an important indicator in assessing the overall efficiency of its economy.

It was during the latter half of the 6th century that several important institutions emerged which became instrumental in determining the trajectory of classical Athens. As we have seen in chapter 6, coined money plays a unique role in stimulating economic efficiency and growth. Athens was among the pioneers in adopting coinage and was one of the first pre-modern economies to be fully monetised.[4] The rapid adoption of coined money would have been instrumental in facilitating market exchange by reducing transaction costs. As a result, market exchange played an essential role in the production and distribution of goods and services in Athens.[5] The imaginative institutional innovation of the Athenians is also evident in their response to the unprecedented financial, logistical and material resource requirements of building and operating a large-scale navy—central to which was the institution of trierarchy.

2 Liturgy—Delivering Public Goods

What was distinctive about Athenian democracy was its unique participatory nature. The legislative, judicial and executive functions of the state were carried out by large numbers of ordinary citizens consisting mainly of amateurs, chosen annually by lot, from the citizen body at large. Additionally, all matters to do with public finance, both how it was raised and how it was spent, was a matter for the demos. The funding requirements of the navy, including when and how many triremes were built and issues of naval capital expenditure on dockyards and shipsheds, were matters of public debate and decision by the demos.

As Ober points out, it would be absurdly reductionist to claim that Athenian exceptionalism was fully explained by democracy alone.[6] Yet, in devising its institutional arrangements Athens seems to have resolved two core difficulties, one relating to politics, and the other to economics. In solving public action problems, especially concerning the important issue of the provision of public goods, democracies are vulnerable to standard collective action problems such as decision-making inefficiencies, and opportunism (free-riding).

4 Kroll 2009, 195; Picard 2001, 8–9.
5 Finley 1973, 22–23.
6 Ober, 2008, 75.

The successful institutional resolution of these potential impediments combined with, inter alia, respect for individual liberty, commitment to private property rights, open exchange markets, and written codified law, all help to explain the exceptional performance of classical Athens in general, and the delivery of public goods in particular.

Public goods are goods or services that can be consumed simultaneously by multiple individuals without diminishing the consumption value of any one of them, a feature referred to as 'non-rivalry'. We can all enjoy a walk in a public park and my enjoyment of it (consumption) does not curtail the park's ability to provide similar enjoyment to others. However, if I eat a 'private good' like a sandwich, no one else can enjoy (consume) the same sandwich. A second attribute of a public good, which again differentiates it from a private good, is its 'non-excludability'. This means that an individual cannot be prevented from consuming a public good even though he or she has not paid for it.[7] This combination of mis-aligned incentives, where producers are discouraged from producing and consumers motivated to free-ride, means that public goods tend to be undersupplied in a private market: what economists refer to as 'market failure'.

Classical Athenians were not unfamiliar with the problems associated with the provision of public goods: 'They devote a very small fraction of time to the consideration of any public object, most of it to the prosecution of their own objects. Meanwhile each fancies that no harm will come to his neglect, that it is the business of somebody else to look after this or that for him; and so, by the same notion being entertained by all separately, the common cause imperceptibly decays' (Thuc. 1.141) In a similar vein, alluding to the free-rider problem, Aristotle also alludes to such problems: 'That all persons call the same thing mine in the sense in which each does so may be a fine thing, but it is impracticable … For that which is common to the greatest number has the least care bestowed upon it. Everyone thinks chiefly of his own, hardly at all of the common interest; and only when he is himself concerned as an individual. For besides other considerations, everybody is more inclined to neglect the duty which he expects another to fulfil …' (Arist. *Pol.* 2.3, 1261b)

The government can correct market failure and provide a socially optimal level of public goods by financing their provision through taxation. Increasingly, in modern societies many such goods and services are not only financed by the state, but are also produced and supplied directly by a state bureaucracy. Faced with the dilemma of delivering essential public goods such as national

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7 Samuelson, 1954, 387–389.

defence, the classical Athenians devised a remarkably exceptional institutional device—liturgy. The essential function of the liturgy institution was the private provision of public goods by means of individual munificence. In the classical period, it was considered both an obligation and a privilege for the wealthy to perform liturgies. Of all the liturgies, trierarchy was the most significant as it involved funding the costs of equipping and manning an Athenian warship for a year.[8] Uniquely within the liturgy concept a trierarchy also entailed taking personal command of the vessel for that year. In terms of both financial and personal commitment the institution of trierarchy was by far the most onerous liturgy for wealthy Athenian citizens.

The archaic period was characterised by intense intra-elite competition for status and power between aristocratic factions centred on family/clan alliances. Some defining cultural norms of the archaic period, the institutional 'rules of the game' of status competition and gift-giving, persisted into the classical period, but in significantly modified institutional forms—exhibiting classic evolutionary traits of constancy (inheritance) and variation. This feature of path dependence, which links the past and the future with the present, underscores the significance for ancient history of institutional change in which, 'choices in the present are constrained by the heritage of institutions accumulated from the past,'[9] as the following account of the evolution of trierarchy will help to illustrate.

3 Trierarchy—Delivering the Fleet

Trierarchy as an institutional variant of liturgy was an adaptation designed to meet the particular requirements of Athenian naval financing. Like all liturgies, trierarchy was an obligation that arose directly from the possession of wealth. The origins of trierarchy are poorly documented, which has given rise to several competing hypotheses as to its institutional evolution. As Gabrielsen argues, there are two related aspects regarding the origins of trierarchy: first, was it an institutional derivation of the 6th century naukrariai[10] and second, when

8 Carmichael 2009, 83.

9 North 2005, 51.

10 Thomsen 1964, 120–123. Points out that scholarship is still divided as to whether the pre-Cleisthenic naukrariai were local administrative units or collections of taxpayers like symmories but maintains that Athens, even in the 7th century, had 'an organised naval power, and so the obvious assumption would be that the naukraric system already existed at that time.'

did trierarchy itself come into being?[11] A third issue, which will be discussed below, is that once trierarchy was fully operational during the 5th century, can we clearly distinguish the division of the financial and other responsibilities as between the polis and the trierarch?

Based on Ps. Arist. (*Econ.*11 4c), Amit raises the prospect that trierarchy existed prior to 510 during the reign of Hippias, but he goes on to deny that possibility on the basis that trierarchy and triremes were integrally associated with each other and as 'there is no evidence to show that there were triremes before 483' there was no need for trierarchy either.[12] However, he does claim that the naukrariai were a precursor of trierarchy, stating 'The naukrary-system is generally considered as an earlier stage of the trierarchy.'[13] On this point Gabrielsen considers that Aristotle (*Ath Pol.* 8.3) is broadly correct in that the naukrariai were a political-administrative entity, and the naukraroi were financial officials in charge of the naukraric fund, and that their presumed role in funding warships is 'an invention of modern scholarship not justified by this passage.'[14] On the issue of trierarchy he is adamant that, 'No specific date can be given for the origin of the trierarchy, nor is there good evidence for its fully fledged emergence through a single enactment proposed by Themistocles.'[15] He contends that the institution was the result of an evolutionary process in response to a gradual development of a state-owned navy during the early part of the 5th century.[16] On the literary evidence of Arist. *Ath. Pol.* 22.7; Hdt. 6.87–93, 7.144 and Thuc. 1.14, Pritchard maintains that it was to serve the needs of a 200-strong trireme fleet created by Themistocles in 483 that 'the Athenian demos created the liturgy of the trierarchy'[17]

More recently, citing Ps. Arist. *Econ.* 2.1347a, which he suggests may 'reproduce genuine archaic information', van Wees has canvassed the creation of trierarchy during the reign of Hippias.[18] Arguing that, sometime between 530 and 500 the composition of the Athenian navy changed from private pente-

11 Gabrielsen 1994, 19.
12 Amit 1965, 103. Amit 1965, 19, argues that all Athenian ships prior to 483 were penteconters.
13 Amit 1965, 104.
14 Gabrielsen 1994, 21. Contra Jordan 1972, 10, who states that the naukrariai 'appropriated the money necessary for the construction of ships'.
15 Gabrielsen 1994, 34.
16 Gabrielsen 1994, 34.
17 Pritchard 2015, 51.
18 van Wees 2013, 99. Contra Jordan 1972, 15, who says this has been wrongly attributed to Hippias and is more likely to have been part of Cleisthenes' reforms, adding that this and other episodes suggest that Athens 'was in the process of reorganizing its financial administration during the early years of the fifth century.'

conters of the 48 naukraroi to 50 publicly-owned triremes, a crucial transition that occurred either under Hippias or Cleisthenes with the latter being 'an even better candidate for the introduction of a public fleet.'[19] For van Wees 'the most plausible interpretation' of these late 6th century naval developments is that Hippias began building publicly-owned triremes while maintaining a parallel naukraric fleet of private penteconters, an institutional arrangement reformed by Cleisthenes into a single 'all-public, all trireme navy.'[20] Following the reforms of Cleisthenes in 508 which gradually reduced the political control of the ruling elite, the evolution of the trierarchy went hand in hand with the expansion of democracy. From the late 6th century onwards, the provision of state security, in naval terms at any rate, had become the sole responsibility of the polis and was soon to culminate in what to all intents and purposes was a standing navy.

Under the new political institutional arrangements, the funding of the provision of public goods through the institution of the liturgy was extended to provide the most important public good of all, security. The institution of the liturgy, designed initially to fund regular and predictable events such as drama competitions with significant though definable costs, was now adapted to cater for the urgent, unanticipated, and unprecedentedly large funding requirements of a naval expansion programme. As the state treasury did not have the capacity to fund the operation of a polis navy on its own, the institution of the trierarchy meant that Athenian maritime security had become the responsibility of wealthy citizens in close partnership with the polis—a very early form of public-private partnership in the provision of public services. Thus, an institutional arrangement that had previously supported an aristocratic order was, *mutatis mutandis*, pressed into servicing the naval military needs of the emerging democratic order. In path dependence terms, the naukrariai institution through which wealthy citizens provided penteconters to the state had evolved into trierarchy in which the wealthy funded much of the operational costs of a state trireme navy. Though incorporating important elements of aristocratic mores such as voluntarism and munificence, the institution of trierarchy brought the command and a large part of the operational funding of its new navy by the wealthy elite firmly within the ambit of the emerging democratic state. As an institutional adaptation proffering social and political esteem with the much-coveted designation, love of honour (φιλοτιμία), trierarchy sought to harness the aristocratic values of excellence or virtue in the delivery of what was a critically important public good for the emerging democracy—naval defence.

19 van Wees 2013, 66–67.
20 van Wees 2013, 67.

Unstinting expenditure on a trierarchy provided comprehensive evidence of a wealthy citizen's eagerness (προθυμία) to serve the state. Aristotle considers that in this context wealth, 'will be used best by the man who has the virtue concerned with wealth; and this is the liberal man … And the liberal are almost the most loved of all virtuous characters, since they are useful; and this depends on their giving.' (*Eth. Nic.* 1120a7–9, 21–23). For Aristotle, the size of the expenditure was important, '… For the expense of equipping a trireme is not the same as that of heading a sacred embassy … The man who in small or middling things spends according to the merits of the case is not called magnificent … only the man who does so in great things.' (*Eth. Nic.* 1122a23–26).

Though liturgies such as the trierarchy were ostensibly voluntary in nature, as in all such institutions, the difficulty of free-riding arises: citizens who had sufficient wealth, but sought to avoid the obligation. Though no legal penalty attached to such behaviour, it exposed such wealthy citizens to the challenge of an *antidosis*. The concept of *antidosis* was an integral part of the operation of the institution of trierarchy which exemplifies the innovative approach of the Athenians in devising institutional responses to real-world problems. Under the rules of *antidosis* a nominated trierarch could challenge another wealthy citizen by claiming either he was wealthier, or had failed to undertake a trierarchy obligation. If successful, the challenger received an exemption and his trierarchy responsibilities passed over to the citizen he had challenged.[21] *Antidosis* was thus a means of identifying citizens who were liable for a trierarchy but were shy about discharging their responsibilities—it was a masterful mechanism for policing free-riders. The principal effect of the self-regulatory *antidosis* mechanism on the institution of trierarchy was the stability it provided in the annual numbers of trierarchs by, in effect, obliging retiring trierarchs to find their own replacements.[22] During economically difficult periods, there was a tendency for the wealthy to hide assets to avoid funding trierarchies.[23] Unsurprisingly however, and despite the associated popular opprobrium, efforts at wealth concealment posed on-going intractable difficulties necessitating additional institutional adaptation, including greater emphasis on public acclaim and honour for the more generous trierarchs.

There was no defined income threshold for trierarchic qualification, which is unsurprising considering the enormous practical and logistical difficulties of

21 Carmichael 2009, 85.

22 Gabrielsen 1994, 94.

23 Gabrielsen 1994, 58, 68. Liturgical liability was best decided at *deme* level where 'visible' property/wealth could be ascertained with greater reliability.

valuing estates in classical Athens.[24] Given these valuation imponderables, the costs of compiling a trierarchic register would be prohibitively expensive. Practical and cost issues aside, the annual compilation of such a list would fatally undermine the institution of trierarchy by eliminating its essentially volitional nature—absent this discretionary aspect and trierarchy becomes a wealth tax in all but name. Even more importantly, a defining institutional element of trierarchy, and one of the principal reasons for its sustained success, was that trierarchy as an institution was self-regulating.

4 Trierarchy in Theory and Practice

Traditional neoclassical economics posits cost-free transactions with prices determined by supply and demand. In such an idealised economy there would be little need for complex institutions as all transactions would be perfectly priced and simple to conclude. However, in the real economy, cost-free transactions are as fictional as frictionless motion. Because of information asymmetries all contracting involves some costs in terms of time and effort. Ronald Coase's insight that transaction costs gave rise to the hierarchical structure of the firm was later built on by Williamson to create what has become known as transaction-costs economics.[25] In transaction-cost analysis information is a critically important factor and lowering access to it can bring substantial economies. The most effective way to lower transaction costs is to have clear rules and regulations governing contracting standards, accompanied by uniform legal mechanisms for dispute resolution. For any economy, including ancient Athens, there are two principal sources of transaction costs; information costs and enforcement costs.[26] The size of transaction costs in an economy can be significant for both public and private transactions. In the case of Athens, the information costs associated with attempting to determine the level of individual's wealth were formidable.

With the information costs of providing a comprehensive land/wealth registry being prohibitively expensive, the liturgy institution provided a cost-effective solution to this information lacuna. There is no better way of 'proving' one has great wealth than by displaying a low marginal utility of both consumption and wealth by giving significant amounts of wealth away, publicly. Spending on liturgies was an ideal way for wealthy Athenians to prove their

24 Gabrielsen 1994, 45–53, 68.
25 Coase 1937; Williamson 1985.
26 North 1981, 33; 1990, 27.

excellence and virtue to their fellow citizens, while indirectly meeting the eligibility criterion for membership of the new property-based ruling elite. In economic behavioural terms, the signalling contained in the institution of liturgy is a rational actor response on the part of wealthy individuals and illustrates how cooperative behaviour can emerge among otherwise highly competitive and self-interested individuals.[27] As the institutions of democracy itself developed, with more decisions being made by popular vote in the Assembly, the requirement by the wealthy to ensure popular support became an even more pressing consideration.

The Assembly had overall authority for state naval policy and allocation of expenditure, while the Boule was responsible for overseeing the construction and supplying the ships (Arist. *Ath. Pol.* 46.1).[28] However, the precise domains of responsibility of the two principal agents involved in delivering naval defence in Athens, the trierarchs and the polis, are difficult to determine with confidence. The enormous capital expenditures associated with the creation of Athens' naval infrastructure, harbours, fortification walls, dockyards, gear storage halls and shipsheds, were exclusively the responsibility of the state as were the ongoing costs of maintaining this extensive infrastructure. The capital and associated operational costs of building the triremes, including hulls and gear, also rested with the state. But once a ship and its gear had been handed over to a trierarch, he was responsible for its safe return on completion of his tour of trierarch duty. Failure to do so resulted in him becoming a public debtor until he paid for replacements.

A sailor was normally paid one drachma per day (Thuc. 3.14; 6.8, 31; 7.27), which was similar to the pay of a skilled labourer or a hoplite,[29] however, the funding of these wages and the associated living expenses of the crew were de facto shared between the state and the trierarchs.[30] The reality of fleet operations meant that a substantial portion of the operational expenses of triremes (including wages) fell to the trierarchs[31] and as Wallinga points out, 'no case is known where we can estimate with any confidence what proportion of this share was of the total outlay.'[32] During the 5th century the burden on the tri-

27 Lyttkens 1994, 463.

28 Whether there were explicit annual quotas of ships to be build (Diod. 11.43.3) is much, and inconclusively, debated. See Jordan, 1972, 21–22; Gabrielsen 1994, 133–136.

29 Loomis 1998, 32–61, 97–120.

30 Gabrielsen, 1994, 124.

31 Gabrielsen 1994, 126.

32 Wallinga 1995, 1. Gabrielsen 1994, 19–104, has provided the most comprehensive analysis of this issue and has been unable to offer a breakdown of the respective contributions of the trierarchs and the state.

erarchs was moderated by the bulk of naval expenditure being carried by the state using imperial tribute (approximately 600 talents per annum) and unforeseen naval expenditures for particular expeditions being covered by loans from the sacred Treasuries of Athena Nike and Athena Polias.[33] Lacking an empire in the 4th century, funding the navy became a much more precarious proposition, and this inability of the state to provide sufficient funding placed a far greater burden on the trierarchs, including the increased use of *eisphora* to make up financial shortfalls.[34]

Recognition of this increased trend towards privatisation of naval expenditure is evinced in the series of reforms that the institution of the trierarchy underwent. The most significant was its transformation from an individual into a collective obligation through the creation of the syntrierarchy whereby the increasing burden could be alleviated by being shared among a number of trierarchs. Trierarchy was being transformed from an elite status obligation with a considerable degree of voluntarism into a fiscal instrument, an effective tax on wealth complete with specified and enforceable penalties for non-compliance. The change in the nature of trierarchy from a military to an administrative fiscal institution was reflective of the radical transformation of classical Athens from a polity controlled by a closed aristocratic elite to the world's first direct democracy.

5 Trierarchy—Institutional Evolution

As an institution the success of trierarchy is due principally to two attributes: short-term stability, whereby the rules of the game were not subject to constant or arbitrary short-term changes and, somewhat paradoxically, a degree of long-term structural and functional flexibility sufficient to permit timely responses to the varying tactical demands needed to deliver the dynamic strategy of conquest. Trierarchy's enduring strength as an institution derived from having a level of in-built redundancy which enabled it to adapt, evolve and innovate in response to the dynamic processes of changing circumstances. On the face of it, such redundancy may conflict with the notion of economic efficiency, but this was more than compensated for by enhanced long-run durability and

33 Gabrielsen 1994, 116–117.

34 Gabrielsen 1994, 116. From the macroeconomic analytical perspective of this book the generally accepted cost of one talent per month as the operating costs of a trireme is the more important aspect, their allocation as between the trierarch and the state is significantly less important.

resilience. In the evolution of institutions, survival of the fittest is not necessarily fully consonant with survival of the efficient.

Any assessment of institutional efficiency must therefore include aspects such as stability and long-term adaptability. While the durability of trierarchy was founded on a combination of stability and adaptability, its overall success must be assessed not in terms of a narrow managerial efficiency but more in terms of its contribution to successful execution of the overall conquest strategy. Trierarchy's absolute performance in this respect was singularly successful. Trierarchy had one other laudable beneficial feature: it was relatively simple in both conception and operation. Despite its critical role in delivering the strategically vital elements of the polis' conquest strategy, the operation of the institution of trierarchy required no full-time bureaucracy worth talking about. In devising institutions like trierarchy, the classical Athenians seem to have had an instinct for both simplicity and risk-reduction and were therefore successful in avoiding so-called 'complexity catastrophes' such as the recent banking and financial crisis failed to do.[35]

From early in the 5th century trierarchy served its essential purpose of providing both finance and commanders for the growing Athenian fleet. However, the exceptional demands placed upon it, in both these respects, by the exigencies of the Peloponnesian War resulted in growing disaffection within the wealthy elite. The Sicilian disaster made a bad situation immeasurably worse. The fiscal burden of maintaining a high level of naval patrols and expeditions throughout the long war with Sparta placed inordinate pressure on the trierarchic class, whose income had decreased in any case due to the disruptions of war. Apart from reduced financial capacity, because of the depredations of war and plague, the size of the trierarchic class itself contracted significantly such that by 411 there was 'a stunning diminution in the number of Athenians available … to pay the state's expenses'.[36] Elite discontent with the level of liturgy payments had reached breaking point and culminated in the short-lived oligarchic coup of 411, also known as 'The Four Hundred'.

With the restoration of democracy following the coup, it was recognised that one of the main causes of the revolt had been the considerable increase in financial burdens of the wealthy, which had grown exponentially during the war with Sparta. Prominent among the original oligarchic conspirators at Samos, where the Athenian fleet was based, were a number of trierarchs who declared 'that from now on the burdens they would bear would be for

35 Beinhocker 2007, 150–152.

36 Kagan 1991,110.

no others than themselves' (Thuc. 8.63.4). Following the re-establishment of democracy, the institution of trierarchy was the first to receive the attention of the reformers. The previous trierarchic principle of 'one man one ship', whereby the discharge of the financial obligation fell to a single wealthy individual, was amended to allow the sharing of financial liabilities among several contributors—a syntrierarchy. This institutional amendment was a significant concession to the wealthy elite and a recognition by the re-established democracy of the need to mitigate the burdens of trierarchy following the fiscal crisis precipitated by the Peloponnesian War.[37] Just as with the institution of trierarchy itself, the precise date for the introduction of syntrierarchy has been the subject of some debate. We do have literary evidence from the period 409 to 405 for the concept of two trierarchs sharing the financial and command responsibility for a single ship (Lys. 32. 24) but Jordan, based on *IG* II^2 1951, argues that dual trierarchies existed prior to this date.[38] In any case, there is ample evidence that sometime during the last decade and a half of the 5th century the principle of syntrierarchy, whereby two wealthy citizens shared the burden of trierarchy, had become an established practice. While instances of single trierarchies continued, it has been argued, based on evidence from *IG* II^2 1609, that with persistently high levels of fleet activity during the 360s syntrierarchy had become the dominant form of trierarchy.[39]

The changes to the institution of trierarchy were not all formal or legal ones. An Athenian trierarch was also literally in the front line of battle and so, on top of his financial liabilities, he faced real risks to his person in the form of death, injury or capture. It is not surprising then that over time there was an increasing tendency for some trierarchs to absent themselves from these dangerous missions by getting subordinates to undertake their on-board command duties. This was not part of the formal rules of the institution of trierarchy with its stress on valour and military prowess by the participants. However, the fact that the absentee trierarch concept was officially tolerated indicates that the primary purpose of the institution was securing naval defence funding; personal presence at sea by a wealthy trierarch was increasingly considered optional. Official acquiescence in this anomalous behaviour combined with leniency towards debt defaulters for fear of discouraging participation by other trierarchs, serves to underscore the pre-eminence of the institution in fiscally delivering a strategically critical public good—naval defence.

37 Gabrielsen 1994, 174.
38 Jordan 1972, 70–71.
39 Davies 1969, 309–333.

Following the Euboean expedition of 358/357, the costs of participating in the institution of trierarchy escalated considerably, compelling the Athenians to issue a special call for trierarchic volunteers (*Dem.* 18.99; 21.160–166). The shortage of trierarchs had become so critical that it threatened Athens' ability to maintain a fleet of sufficient size to guarantee her security. In 358/57 what became known as Periandros' Law, which radically reformed the institution of trierarchy, was passed by the Assembly. Under the new rules of Periandros it was formally accepted that a wealthy trierarch no longer had to serve on board the trireme he financed. This had the effect of augmenting the pool of potential trireme funders by extending the financing obligation to those over the age of military service eligibility. Furthermore, the operating costs of a trireme along with responsibility for the safe return of its wooden and hanging gear could now be shared by a group of up to 16 individuals known as symmories (*summoriai*).[40]

Periandros' Law of 358/7 was a radical reform of the institution of trierarchy in response to a growing shortage of trierarch volunteers which by mid-century had reached crisis proportions. By dividing the trierarch class into 20 symmories of 60 individuals each, the reform sought to enhance the attractiveness of the trierarchy by spreading the costs of participation among a larger group. At the same time, on the assumption of just 20 ships per symmory, it created the fiscal basis for funding an operational fleet of 400 triremes, which satisfied the actual fleet requirements for this period, given that from 358/7 to 323/2 the total number of ships never exceeded 350. Aside from reducing the financial burden for participants, this reform gave legal recognition to the 'absentee' trierarch concept by permitting an individual to fund a ship without having to take command. With a nominated trierarchic class of 1200 the institution of trierarchy was split into two functionally differentiated groups: the majority providing finance while a minority assumed the full trierarchic obligations of both finance and command (*Dem.* 21.154–155).[41] With these reforms to the institution, as Gabrielsen comments, 'The process of transforming the trierarchic obligation into a tax proper was well under way.'[42]

In line with trierarchy's institutional tradition of self-regulation, the obligation to ensure the safe return of all equipment used by the previous trierarch fell on the new appointee(s), who in instances of equipment shortfalls was obliged to pursue the miscreant through the courts to recover the monetary equivalent. This privatisation of naval debt collection was undoubtedly

40 Osborne 2008, 279.

41 MacDowell 1986, 441–443.

42 Gabrielsen 1994, 198.

an additional imposition of burdens on the trierarchs, but it was counterbalanced by a reduction in the overall exposure of individual trierarchs by permitting group participation through symmories. By decreasing the effective cost of trierarchy involvement for the individual, the state could increase the core number of trierarchs to 1,200 and thereby maintain the trierarchy's revenue generating capacity. These institutional innovations achieved a fine balance between securing the state's interests and avoiding undue pressure on the trierarchs reflecting both the Athenian and the trierarchy's intrinsic capacity for adaptation in the face changing circumstances.

A further, and to all intents and purposes, final reform was instituted at the behest of Demosthenes in 340. The intent behind Demosthenes' trierarchic law was to spread the financial burden of trierarchy more equitably among the wealthy citizens. This was achieved by simply fixing the size of each benefactor's contribution as a proportion of his property wealth which resulted in the wealthiest 300 citizens bearing a higher financial burden than their less affluent compatriots within the overall Periandric 1200 trierarchic class. The Athenian state, cognisant of the importance of trierarchy and solicitous of its relationship with the trierarchic class, looked to the new Demosthenic principle of proportionality to quell incipient discontent within the 1200 (representing about 4% of the estimated 30,000 Athenian citizens).[43]

6 Cleruchy—Further Institutional Adaptation

Normally, Greek colonies were politically independent but maintained a special relationship with the mother city.[44] But oversimplified colonial scenarios are problematic: the precise relationship between colony and mother-city and even the status of a new settlement were, in many instances, far from clear during the archaic period.[45] Cleruchies were significantly different. The Athenian institution of cleruchy is in evidence from the 6th century and was adapted to meet the changing requirements of Athens as it transitioned from its high-empire phase of the 5th century to the 4th century when it could no longer depend on tribute.

43 Gabrielsen 1994, 212–215.

44 Graham 1964, 13–14, who highlights the difficulties matching literary and archaeological evidence for purposes of identifying and confirming links between colony and mother city.

45 Wilson 1997, 206.

The essential feature of the institution of the Athenian cleruchy was that in return for a grant of land (kleros) the citizen was obliged to pay Athenian taxes and serve her militarily when required.[46] A cleruchy was a specialised type of colony established by Athens in which settlers, or cleruchs, retained their Athenian citizenship and the new community remained a political dependency of Athens. As with the main Greek colonisation movement discussed earlier (chapter 2), traditional scholarship has often portrayed the establishment of cleruchies as a means of exporting excess and generally impoverished populations from Athens to conveniently distant locations such as the Thracian Chersonese.[47] While this may have been a consideration on occasions, the benefits accruing to Athens from the institution of cleruchy extended far beyond the issue of population to include, economic, political, military and strategic calculations.

As with many of the institutions which were to become functionally essential to the operation and maintenance of Athenian hegemony during the 5th and 4th centuries, the institution of cleruchy had its roots in the late archaic period. The first known cleruchy is thought to have been Salamis, captured by Athens from Megara in the 6th century BC.[48] The earliest surviving Athenian decree, the so-called 'Salamis decree' (*IG* 1^3 1)[49] relates to this cleruchy at Salamis and specifies the rights and duties of the cleruchs such as the obligation to pay taxes and perform military service as hoplites. From the reconstructed evidence of what seems to be the first extant decree of the Cleisthenic polis, each cleruch was obligated to supply his own arms to the value of 30 drachmae, an indication of the military character of the cleruchy institution and a further manifestation of Athens' desire to control the western sea-routes of the northern Saronic Gulf. In 506, following the first military victories of the newly established democracy against the Boeotians and Chalcidians, Athens established another cleruchy on Chalcis settling 4,000 cleruchs on the island (Hdt. 5.77.2).[50]

46 Moreno 2007, 102.
47 Meiggs 1972, 260–261.
48 Fornara 1977, 45–55.
49 Meiggs, Lewis 1988. 26–27, no. 14.
50 Figueira 1991, 44–45,142–148, 256–260. He outlines some differences between 6th century cleruchies of Salamis and Chalcis and later ones of the imperial period. It is unlikely that Miltiades establishment of an Athenian colony in the Chersonese or at Sigeum were cleruchies, they were more likely early examples of 'privateering' ventures prior to the establishment of a polis navy (Hdt. 6.34). However, they do illustrate that from the 6th century Athenian strategic interests extended beyond its immediate surroundings of Salamis, Aegina and Chalcis to the wider Aegean.

The advent of empire created significant opportunities for Athens to extend the cleruchy institution more widely across the Aegean. As Athenian cleruchs continued to pay tax to Athens, and in some cases non-Athenians (sometimes the original owners) worked the land and paid rents to the cleruchs—as in the instance of Mytilene (Thuc. 3.50.2)—Athens was a net gainer in financial terms.[51] As Thucydides attests, in many instances such as Naxos, Euboea, Aegina and Potidaea, Athens expelled the original occupiers from the land they seized in foreign territories (Thuc. 1.98, 114.3; 2.27.1, 70.3–4.), which could then be designated as either colonies (ἀποικίαι) or, much more likely, cleruchies (κληρουχίαι).[52] In the case of the latter, older scholarship suggests that, in some cases at least, the original owners remained on the land as leaseholders with the Athenian cleruchs acting as de facto landlords.[53] Recent inscriptional evidence indicates that cleruchs were at liberty to travel at will and reside where they choose.[54] This lends some credence to this older hypothesis that at least some Athenian cleruchs took up residence abroad only for a period before returning to Attica to live off the rent from their foreign landholdings. From Thucydides' descriptions, these seizures of foreign territories by Athens and their subsequent allotment to Athenian citizens as either colonists or cleruchs, consisted of military, political, judicial and administrative acts conducted by the Athenian polis. None of the attested cleruchies from the mid-5th century onwards could be construed as the outcome of private entrepreneurial actions: they were polis initiatives in both conception and execution. Furthermore, they resulted in both financial benefits accruing directly to private individuals and economic benefits flowing indirectly to the state.

According to Thucydides, following the revolt of Lesbos (427) the land was confiscated but the people were not expelled or exiled, instead their appropriated land was divided into 3,000 lots, 300 allotted to the Attic deities and the remaining 2,700 given to private citizens (Thuc. 3.50.2). The original owners continued to work the land as leaseholders, paying an annual rent of 2 minae per annum each[55] to the Athenians.[56] This amounted to a sizable annual total of 100 talents which was divided 90:10 respectively between the private

51 Samons 2000, 201.

52 *IG* I³ 237. While literary sources use these terms interchangeably, this inscription from the last decade of the 5th century implies that the two settlement types were legally distinct.

53 Jones 1983, 175–177. Brunt 1966, 81–84. Gauthier 1966, 65–66.

54 Hallof, Habicht 1995, 293–299.

55 This figure of 200 drachmae per annum was sufficient to qualify each rentier as a hoplite.

56 Zelnick-Abramovitz 2004, 334–335. Though there is other evidence for Athenian absentee landlords receiving rent from confiscated foreign land we simply do not know how prevalent or extensive this type of confiscate-and-lease-back arrangement was.

Athenian citizens and the polis gods. There is a plausible argument that these 100 talents were in lieu of tribute because 'tribute was not imposed upon the Lesbians' (Thuc. 3.50.2)[57] Compared to this size of annual revenue extraction, payment of tribute was far less of a financial imposition—the Lesbos figure of 100 talents accruing from the cleruchy was three times the highest annual tribute assessments paid by Thasos and Aegina of 30 talents each.[58] In the case of Lesbos, the 100 talent figure must be considered punitive especially when one considers that up until 428 Mytilene's League contribution had been ten ships, the equivalent of ten drachmas—it was now paying 900% more annually through the institution of cleruchy.

The imposition of Athenian cleruchies was sometimes accompanied by a brutal policy of deracination of the local population as confirmed by attested examples such as Histiaea (Thuc. 1.114.3) and the particularly brutal case of Melos (Thuc. 5.116.4). But notwithstanding these, it would seem that material gain and the extraction of economic surplus were the motivations that drove the policy of cleruchies. Precise figures for the cleruchy payments are of course impossible to determine, but from Athens' perspective the economic and financial benefits accruing from these cleruchies were significant and must have been significantly higher than the annual tribute payments of between 460 (Thuc. 1.96.2) and 600 (Thuc. 2.13.3) talents when non-financial benefits are included. In addition, Moreno has argued that much of the 1.3 million *medimnoi* of annual Athenian wheat imports (worth c. 1,300 talents) came from an 'empire of cleruchies, with Euboea as its crown jewel.'[59]

Few scholars today would support the previously dominant position that the 4th century represented a period of 'failure' or 'decline' for Athens, in which strategic mistakes were made in a futile and illusory pursuit of the 'ghost of empire'.[60] Athens instituted what amounted to a carrot and stick strategy in which the institution of cleruchy played a central role. In the wake of the King's Peace, Athens sought to establish the Second Athenian League, the foundation document for which was the Aristoteles decree.[61] The purpose of the Aristoteles' decree was to allay fears of prospective members of the new League that Athens would revert to her 5th century imperialist ways. One of the spe-

57 Figueira 1991,196.

58 Osborne 2000, 91, suggests the tribute payment was 'trivial' in comparison.

59 Moreno 2007, 10,143.

60 Badian 1995, 89. Also see Cawkwell 1981, 40–55.

61 The second Athenian league lasted for 40 years until it was abolished by Philip of Macedon in the Peace of Demades (Paus. 1. 25.3), however, its importance declined following the Social War (357).

cific practices disavowed by Athens in the decree was the establishment of cleruchies on allied land and territories and, according to Diodorus, it even reversed past seizures by restoring 'the lands which had become cleruchies to their former owners.' (Diod. 15.29.8).[62] It was a de facto, if belated, recognition by Athens that such practices had been at the root of considerable allied resentment in the past and were therefore proscribed for the future.[63] However, the proscription of cleruchies related only to League members so, for the likes of Lemnos, Imbros and Scyros, they remained in place and non-League members such as Samos and Potidaea were also subjected to the imposition of cleruchies later.[64] Thus, for those who refused to sign up to the new military alliance (*synedrion*) Athens showed little reticence in applying the 'stick' element of cleruchy for those remaining recalcitrants. Of particular interest is the instance of Samos which, despite having a long-standing close association with Athens, was subjected to a cleruchy, presumably *pour encourager les autres*.[65]

The evolution of the cleruchy institution followed a similar pattern to some of those other Athenian institutions, such as those of the navy and coinage, which later became bulwarks of the economic foundations of the democratic empire. Apart from Salamis, which would appear to have been a polis-initiated venture, most cleruchies in the 6th century were quasi-private initiatives by the Athenian elite, such as those of Sigeion, Lampsacus, Philaid Chersonese, Lemnos and Imbros.[66] But by the 5th century the institution of cleruchy had been transformed, not merely into a polis-controlled institution, but a democratic one with a very distinct Athens *outre-mer* feel to it. No longer an elite public-private partnership, cleruchies were instituted at the behest of the polis to the economic and financial advantage of both the state and private citizens. Traditional scholarship has tended to emphasise population control, social mobility[67] and security reasons for installing cleruchies[68] while failing to give adequate recognition their economic significance. This tendency has been influenced undoubtedly by our literary sources which, in general, eschew citing economic motives as a matter of course, as Plutarch's comments on cleruchy

62 Hansen 1999, 162.

63 Moreno 2009, 211–212.

64 Badian 1981, 91.

65 Cawkwell 1981, 51. Samos and another non-League member, Potidaea, are the only attested new cleruchies indicating that Athens abided by her commitment; Hornblower 1983, 231.

66 Moreno 2009, 215.

67 Social mobility was involved when, for instance, thetes were allocated land and as a result were elevated to the zeugitai property class and so were obliged to defend the colony as a hoplite.

68 Meiggs 1972, 260–261.

attest: 'he (Pericles) dispatched 1,000 settlers to the Chersonese, 500 to Naxos, 250 to Andros, 1,000 to Thrace … In this way he relieved the city of a large number of idlers and agitators, raised the standards of the poorest classes, and, by installing garrisons among the allies, implanted at the same time a healthy fear of rebellion.' (Plut. *Per.* 11.5). Some or all of Plutarch's catalogue of reasons were likely to lie behind the decision to implement a cleruchy on occasions, however, as the Lesbos example makes clear, the economic benefits were very substantial and are therefore likely to have been a key consideration in any decision to establish a cleruchy. Though the evidence can never be definitive, cleruchies are very likely to have surpassed tribute in economic importance to the political economy of the classical Athenian.[69]

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69 Moreno, 2007; 2009, makes the substantive case for the economic importance of cleruchies especially as a reliable source of vital grain supplies. Favouring the economic, Moreno disputes the military/security, social mobility/welfare aspects of cleruchies promulgated in traditional scholarship.

CHAPTER 8

Naval Innovation

1 The Archaic Fleet and Athenian Defence Strategy

The late archaic period was a time of increased maritime activity, trade and profit-seeking throughout the Aegean as confirmed by Thucydides: 'As Hellas grew more powerful and continued to acquire still more wealth than before, along with the increase of their revenue tyrannies began to be established in most of the cities … The Hellenes began to fit out navies, too, and to apply themselves more to the sea' (Thuc. 1.13.2). During the second half of the 6th century, especially under the Peisistratid tyranny when commercialisation and urbanisation grew apace, the Greek state that made significant advances economically was Athens.[1] Athens pursued its economic interests, becoming the dominant player, for example, in the production and export of painted pottery throughout the Mediterranean. It was its production and export of fine black and red figured pottery that differentiated Athens from all other poleis during this period, as it overtook the previous market leaders, Corinth and Laconia.[2] As Athens grew economically through trade, her maritime interests became of greater strategic importance.

An Athenian fleet existed during the archaic period but it was not a polis navy as state navies only began to emerge in the latter decades of the 6th century. For much of the 6th century, ownership of ships was largely the preserve of aristocratic families who used them for both trade and raiding. In reality, the distinction between trade, piracy, and warfare was moot, as 'this occupation (piracy) did not yet involve disgrace (ἀισχύνη) but rather conferred something even of glory (δόξης)' (Thuc. 1.5.1).[3] In times of crisis, wealthy ship-owners, whether aristocratic or merchant, placed themselves and their vessels at the service of the state. This type of privateering by both merchants and aristocrats was beneficial to the state and profitable for the individual. The standard vessel of this period, used for both long-distance trading, raiding and warfare, was the penteconter (Thuc. 1.14). But private ownership of triremes, despite their capital and operating costs, was not entirely unknown (Hdt. 5. 47). Because of its physical characteristics and affordability, the penteconter was the vessel of

1 Starr 1989, 28.
2 Ober 2008, 73.
3 Braudel 1972, Vol. 2, 190–212.

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choice for members of the aristocratic elite intent on enhancing their power, wealth, and prestige through active engagement in such 'economic' activities.[4] The penteconter, powered by 50 rowers for speed and with sails for long distance sea-faring, was ideally suited for raiding and piracy (Hdt. 3.39). As the century progressed and trading opportunities expanded, the class of wealthy non-aristocratic merchants increased correspondingly so that by the end of the century, the horseman (ἱππεύς) went to war with his horse, the hoplite (ὁπλίτης) with his weapons and armour and the wealthy merchant or aristocratic ship-owner with his ship.[5]

As archaic Attica was a predominantly agricultural economy at this time, protection of its arable hinterland is presumed to have been a priority of Athenian military strategy. In line with other Greek poleis, according to Herodotus, Athenian security requirements were concerned primarily with repelling invasions from neighbouring states, and protecting its borders in conflicts 'for straitened strips of land of no great worth.' (Hdt. 5.49). This is a pattern fully consonant with North's model of early state behaviour; 'neighboring states must decide whether to ignore each other, fight, ally, integrate, or destroy each other. Whether they ally or unite depends in part on their ability to create credible arrangements between the dominant coalitions in the two societies.'[6]

In 519 a major dispute erupted between Athens and Thebes and, despite reconciliation attempts by the Corinthians who mediated a peace, and 'reconciled the parties by defining the boundaries of their respective territories …' (Hdt. 6,108.5), in the ensuing war part of Boeotia was occupied by Athens. There are two aspects to this conflict that are of note: first, it illustrates that for archaic Greek poleis dispute resolutions other than resorting to war were possible (unsuccessful in this instance), and second, it is one of the few references we have to an archaic period Athenian land war.[7] The others, mentioned by Herodotus, are four separate invasions of Attica by the Spartans (Hdt. 5. 76). One of these was a Spartan incursion to overthrow the Peisistratus regime in 510 in which the Spartans sent their invasion force 'by sea on boats, and the army came ashore at Phaleron.' (Hdt. 5.63.3). The boats in question were almost certainly penteconters and were being used as troop-carriers. The fact that the Spartans 'came ashore at Phaleron' may also be an indication that the harbour facilities at Piraeus had not yet been built (Thuc. 1.93.3): on-shore maritime infrastructure may not have been a priority for Athens in 510. With

4 Hass 1985, 31–35.
5 Amit 1965, 105–106.
6 North 2009, 40.
7 van Wees 2004, 204.

respect to the path dependence discussion in chapter 3, it also shows that the archaic Spartans were still active maritime interventionists, not only against Samos in 525 (Hdt. 3.46–47),[8] but against Athens in 510.[9] More importantly, when we look at the range of strategically significant engagements in which naval forces played a central role during the 6th century including, Sigeum, Megara, Salamis, Strymon, Naxos, Chersonese, Aegina, Paros and Chalcis,[10] it is difficult not to conclude that by the closing decades of the 6th century Athens had developed extensive naval ambitions which encompassed the whole of the Aegean.

Military and commercial competition amongst the leading Greek poleis was a perennial aspect of inter-state relations throughout the eastern Mediterranean in the late archaic period. It reached a new intensity in the western Aegean in the second half of the 6th century, resulting in a vigorous naval arms race. This saw the widespread adoption of the trireme as the principal ship-of-the-line by the emerging naval powers of the Greek world.[11] In terms of naval architecture, the trireme was a radical departure from its immediate predecessor, the penteconter.[12] It was a watershed moment as polis after polis adopted the new warship technology. The advent of the trireme, the world's first dedicated warship, was a step-change in terms of resource commitments, including, materials, manpower and finance, the combination of which necessitated the development of new financial and administrative institutional structures. The opportunities for innovation which sea power presented were not limited to technology; it offered enormous scope for the application of Greek imaginative intelligence to innovations in human ingenuity.

Academic polemics on the ancient economy have not been confined to the oikos debate. Because of limited and sometimes conflicting source evidence scholars, even in such specialised fields as maritime archaeology, have adopted

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8 Jeffrey et al. 1982, 245. The reasons for this Spartan decision to assist the expelled Samians unseat Polycrates are unclear but a possible reason suggested here is 'the balance of power in the Aegean in the second half of the sixth century.'

9 In path dependence analysis Sparta was not precluded from adopting a naval strategy, it was clearly a potential option at this stage.

10 de Souza 2013, 369, who makes the valid observation that many of these were, in modern parlance, 'amphibious strike operations', in which the military personnel involved were not primarily oarsmen but light infantrymen. However, without ships such power projection would not have been feasible.

11 Rawlings 2007, 123–124.

12 Coates 1995 136. John Coates claims that representations of two-level penteconters 'always show them with an extended forefoot or ram-shaped bow', adding, 'the two-level pentekontor may be claimed to have been the first true warship, designed to wield the ram, a purely anti-ship weapon'.

diametrically opposed views based on different interpretations of the same evidence. Designed for naval combat under oar-power with the ram as its principal armament, many aspects of the ancient Greek trireme have been the subject of intense scholarly debate and speculation.[13] Generations of classicists and maritime historians have endeavoured to identify when the trireme first appeared, where it was invented, and how it functioned. In the case of the latter, the precise configuration of the rowers, the so-called 'trireme question', was the subject of prolonged and impassioned academic controversy over many decades.[14] This thorny question was only finally resolved by one of the most important recent undertakings in experimental archaeology, the building of a full-scale functioning replica of a trireme, the *Olympias*, completed in 1987.[15]

Regarding when and where the trireme emerged, Morrison, one of the most authoritative trireme scholars and a prime mover in the *Olympias* project, sees no reason to discount Thucydides' version (Thuc. 1.13.2–4) that the Corinthians invented the trireme in the 7th century.[16] The alternative, that the trireme entered Greek fleets in the latter half of the 6th century in Ionia, is promulgated by Davidson; 'At some time between 550 and 525 the trireme makes its appearance'.[17] This Phoenician provenance is also supported by Meijer,[18] Lloyd,[19] Basch,[20] and Wallinga with the latter arguing 'that the first introduction of the trireme into Greek navies should be dated to the third quarter of the sixth century, and preferably nearer to 525 than to 550'.[21]

While the *Olympias* project put an end to the long-running debate on the so-called 'trireme question', from an iconographical perspective there is an incongruity. There is not a single piece of visual evidence to support the prevailing and experimentally proven orthodoxy of the three-level trireme oar system in any iconography prior to 350; a cautionary lesson for those inclined to make

13 The debate as to where the trireme as a new galley design first emerged is of secondary importance in our discussion, but Morrison et al. 2000, 40–41 argues for a Corinthian origin contra Wallinga 1993, 127 who makes a convincing case for a Phoenician 'genesis of the trireme.'

14 Lloyd 1975, 45.

15 Morrison et al. 2000, xiii–xxviii.

16 Morrison and Williams 1968, 158–159. Morrison 1979, 62. Morrison 1980, 15–19, who argues here for a date between 700 and 650 for the introduction of the trireme to Greece.

17 Davidson 1947, 23.

18 Meijer 1988, 461–463, who suggests that Thucydides' accuracy is suspect in its details.

19 Lloyd 1975, 53–54 who argues Thucydides got the place correct, Corinth, but the chronology wrong.

20 Basch 1969, 139–162, Credits the Phoenicians with inventing the trireme and argues it became part of Greek fleets during the 6th century.

21 Wallinga 1993, 15.

historical claims based solely on iconographic evidence, as the discussion on ram development (below) illustrates. With this in mind, Shelley Wachsmann's counsel on the pitfalls of interpreting ancient ship iconography is apposite: 'when studying ship depictions, we must keep in mind that we are not dealing with actual ships, but rather with representations whose creation is subject to a myriad of influences which can lead to dramatic differences between the prototype and its reproduction.'[22]

Following Finley, the primitivist view that ancient Greece was characterised by economic stagnation and technological blockage has had an enduring influence.[23] Even within the field of maritime history, some scholarship continues to argue that not just Greece but the Mediterranean suffered from a dearth of maritime technological innovation.[24] For instance, Casson claims that 'throughout the whole of ancient times, up to, say, the middle of the first millennium A.D., seagoing merchantmen of the Mediterranean were built, rigged, and steered in the same way'.[25] While the economic historian Mokyr, taking his lead from Casson, states that 'in shipping … advances were modest.'[26]

Much of this is a legacy of Finley's highly articulate, discursive and idiosyncratic approach to ancient economic history. He was largely disdainful of archaeological evidence,[27] dismissing the vast material evidence for the large-scale production and trade in Athenian pottery with the comment: 'We are too often victims of that great curse of archaeology, the indestructibility of pots.'[28] A core part of the Finleyan/primitive credo is that technological innovation and the economic growth with which it is associated, are purely a modern phenomenon whose absence in pre-industrial societies marked them out as stagnant and primitive. It is only since the Industrial Revolution that the technological paradigm has been employed as the *dominant* dynamic strategy (in the West, initially).[29] One of his central contentions was that economic progress based on technical innovation could not be proven merely

22 Wachsmann S. 2012, 239–240. The Belgian surrealist painter, René Magritte made a visual point of this in his 1928 painting, '*La trahison des images*', which is an image of a smoking pipe with the caption, 'Ceci n' est pas une pipe'.

23 Finley 1965, 29–45; 1973; 1985.

24 Harris 2011, 11. The discussions related to commercial trading vessels and merchantmen, but there is no suggestion that naval vessels or triremes were excluded from the innovation malaise.

25 Casson 1994, 152.

26 Mokyr 1992, 24.

27 Greene 2000, 29–31.

28 Finley 1965, 41.

29 Snooks 1996, 239.

by demonstrating 'the appearance of an invention': the critical factor was 'the extent of its employment'.[30] Despite his denial of technological innovation in ancient Greece, Finley astutely identified the essential determinant of economic progress based on innovation—application not appearance. In this regard he quoted Schumpeter with approval: 'classical scholars as well as economists … are prone to falling into the error of hailing as a discovery everything that suggests later developments, and forgetting that, in economics as elsewhere … facts acquire importance only by the superstructures that they are made to bear and are commonplace in the absence of such superstructures'.[31] Both Finley and Schumpeter concur that, put simply, an important indicator of economic progress based on technological innovation is not simply innovation in itself, but the extent of its utilisation. To this must be added a further dimension, the speed with which a new invention is taken up and how quickly it supplants its predecessors. A rapid rate of diffusion of technological improvements is a good indicator of its ultimate significance as a contributor to overall economic performance.[32]

But of greater significance from the perspective of this book is the more egregious contention that the *only* source of economic growth is technological innovation. In doing so it precludes, *a priori*, any consideration of alternative dynamic strategies to explain socio-economic change in ancient societies and, as a consequence, the primitivists and their substantivist associates are forced to conclude that societies like classical Athens were stagnant and had 'no interest in growth'.[33] To enhance its competitive edge in an intense competition for material advantage and economic dominance of the Aegean, Athens did not pursue technological innovation in agriculture,[34] the dominant if subsistence-orientated sector of the economy. Instead, it invested its innovation resources in maritime transportation, naval expansion and defence infrastructure as a rational means of direct support for its dominant conquest strategy.[35]

Uniquely among the giants of modern economics, Schumpeter had a particular focus on macroeconomic change. He recognised the importance of these

30 Finley 1965, 29.
31 Schumpeter 1954, 54.
32 Harris 2011, 15.
33 Mokyr 1990, 9.
34 Foxhall 2007, 256: 'The large-scale adoption of innovation not only entails risk, and the ability of even the wealthiest land owners of the Classical period to confront high risks was limited, but may also have limited flexibility. The latter could well have been a very important consideration for householders operating in environments perceived to be unstable and volatile, where maintaining flexibility and opportunism was a key aim.'
35 Snooks 1996, 123.

dynamic processes and the complexities involved in economic growth and socio-economic change in general: 'The social process is really one indivisible whole. Out of its great stream the classifying hand of the investigator artificially extracts economic facts.'[36] As further evidence of his more nuanced approach, in the quotation used by Finley above, Schumpeter has a telling qualification, '[statements of fundamental] facts acquire importance only by the superstructures that they are made to bear and are commonplace in the absence of such superstructures.' In classical Athens, the vast superstructure of 'the glory that was Greece' was created and maintained by the dynamic strategy of conquest which in turn was buttressed by a supportive sub-strategy of technological innovation in defence and maritime transportation. As discussed below, there was technological innovation in ancient Greece, much of it directed towards the commercially and militarily important maritime sector. Important naval innovations such as the ram and mortise-and-tenon shipbuilding techniques were being widely incorporated in Greek ship design by late 6th century. The trireme itself represents an enormous leap in naval technological innovation.

From the last decades of the 6th century the trireme became the ship-of-the-line for all emerging maritime powers in the Aegean. Trireme fleets of scale could only be acquired by those poleis with the economic wherewithal to finance their construction and, especially, their operation. The intensely competitive world of the western Aegean saw an arms race develop in which the polis that achieved trireme supremacy in terms of numbers and skills would have achieve sustained dominance—the victory, by a long chalk, went ultimately to Athens. From an economic history perspective, it was not the invention per se that was significant but its diffusion and, in particular, the speed of the diffusion. The rapid spread of new advances in maritime technology was precisely the type of Schumpeterian innovation which supported the vast 'superstructure' of classical Athens, much of which still strikes us as emblematic 2,500 years later. Yet, as Scheidel points out, the debate on technological innovation in the ancient economy to date has left 'little room for nautical technological innovation as a significant driving force of economic development.'[37]

36 Schumpeter 1949, 1.

37 Scheidel 2011, 37. However, while Scheidel believes that technological innovation has been under appreciated in the debate thus far, his principal argument is that lower transaction costs due to decreased 'predation' contributed far more to economic growth.

2 Naval Technological Innovation—the Ram

Powered by oars on two levels the traditional triaconter (τριακόντορος) and penteconter (πεντηκόντορος) of the Greek world were gradually replaced by the new larger, faster, and more manoeuvrable trireme (τριήρης) with its three-level oar system. In addition to the two levels of rowers in traditional vessels, the upper level (ζύγιοι) and the lowest level (θαλάμιοι), a third level of oarsmen (θρανῖται) was added on top of these. The design innovation that made this possible involved extending the hull upwards and adding an outrigger (παρεξειρεσία) which placed the new upper-level set of oars furthest from the vessel to avoid interference with the oar strokes of the rowers on the two levels below. The effect of this new design was to enhance the power of the trireme by at least 50% compared to a vessel of similar hull length and width equipped with a traditional two-level oar system.[38] Longer than any of its precursors, the trireme's width to length ratio was relatively narrow which gave it a long, streamlined appearance much like a modern jetliner. The purpose of this was three-fold: reduce water resistance (and hence increase potential speed), improve manoeuvrability, and concentrate maximum force at the bow to cater for high-impact ramming in battle.

Claims based on iconography alone that ramming was a standard feature of naval warfare extending back as far as the 9th century are highly questionable. For deliberate ramming to be a routine feature of naval engagements, bronze casting technology had to have developed to a level of sophistication which would permit the ram to survive regular high impact encounters. Bronze casting of this consistency and quality did not emerge until the latter part of the 6th century.[39] Furthermore, it was not until towards the end of the 5th century when bronze casting had further evolved before the risks involved in frontal ramming, the deliberate prow to prow collision between two warships, were sufficiently reduced for this tactic to be deployed successfully. The shock forces generated by such direct head-to-head collisions were equated by Diodorus to a 55-metre-long battering ram smashing into the stone wall of a city (Diod. 20.95.1)—the type of impact only the most carefully crafted rams could hope to

38 Rankov 2013, 78.

39 Murray 2012, 15–17; Oron 2006, 63, 74, contains a detailed analysis on Athlit ram bronze casting including new data on bronze-casting techniques that 'allow postulation of the innovative use of the direct lost-wax casting method to fulfil the ram design requirements.' It was a technique widely used from the classical period onwards and ideally suited to making rams for triremes that did not have bow shapes of consistent dimensions. See below for more extensive discussion on bronze-casting and ram design.

FIGURE 3 The ram of the *Olympias*
THE TRIREME TRUST ARCHIVE AT WOLFSON COLLEGE, CAMBRIDGE

survive. Such was the awareness (and fear, presumably) of the high risks associated with prow-to-prow ramming that the Athenians considered a helmsman who engaged in such a manoeuvre to be at best, unskilled, and at worst, grossly derelict (Thuc. 7.36.5).

There are no literary references to rams or ramming prior to the mid-6th century, and the archaeological record is also silent. All rams discovered so far date from the very late 3rd or very early 2nd century.[40] The only substantial descriptions of seafaring in the preceding centuries are those in the Homeric epics which make no reference to the existence or use of ramming in naval warfare.[41] However, there is a considerable corpus of iconographic evidence showing waterline bow projections dating back many centuries, some as far back as the 10th century.[42] As the only rams discovered so far by marine archaeologists date from the very late 3rd or very early 2nd century,[43] those who argue for the existence of rams and ramming prior to the mid-6th century do so solely

40 Casson, Steffy 1991, 6–39.

41 Casson 1995a, 43, according to whom, the reason Homer makes no mention of a ram is because 'the poet seems to have been careful not to commit an anachronism.' Of course, the other possible reason is that rams did not exist at that time.

42 Williams 1949, 126–137; Kirk 1949, 93–153.

43 Casson, Steffy 1991, 6–39.

on the basis of interpreting this iconography.[44] It is important to note that many of these vase paintings are stylized depictions of ships, and none of those that contain scenes of naval battles shows ramming taking place. Many of the depictions on Greek pottery are of long, sometimes conical, pointed waterline projections at the prow of the ship, from which it is nigh impossible to conclude whether such designs were structurally capable of withstanding the shock of ramming.[45] Given that these representations are largely of penteconters (none is a trireme), their use in ramming as a regular tactical manoeuvre is questionable.

Yet, despite the complete absence of any textual or archaeological evidence before the mid-6th century, some commentators place the origins of the ram as far back as the third millennium, based, in one instance, on a highly questionable interpretation of dubious iconographic evidence: an image on a pottery shard compared with the third millennium Dorak daggers,[46] which have ships with bow projections.[47] Casson and Linder, while emphasising that the ram's emergence 'was a crucial step that transformed the nature of naval combat as well as the ships', dispute this very early development of the ram, they contend instead that it emerged at the end of the Protogeometric period (900).[48] As to the purpose of the bow projections of previous centuries, Casson and Linder are at a loss to explain: 'the reason is unclear; perhaps the feature was structural'.[49] More importantly, they proffer no explanation as to why suddenly, at the end of the 10th century, these pointed bow projections get transformed into rams—a profound technical innovation in which 'the ship was the weapon; the ram was merely the warhead.'[50] To better understand my contention that rams were specifically designed to transform the ship into a self-propelled lethal missile capable of inflicting maximum damage and were therefore unlikely to have been developed before the 6th century, it is necessary to have a fuller appreciation of what ramming entailed in the context of ancient naval warfare.

A naval ram was an offensive weapon comprising a solid wooden protrusion covered in heavy bronze and fully integrated with the bow of a warship, whose

44 Morrison, Williams 1968, 7; Casson, Steffy 1991, 76; Basch 1983, 395–412.

45 Mark 2005, 104–114.

46 The so-called 'Royal Treasure of Dorak' has never materialised and no photos exist, only drawings and rubbings by the archaeologist James Mellaart, on whom it is now believed a massive hoax had been perpetrated. (Salusbury, Matt. *Financial Times*, November 2009.)

47 Morrison, Williams 1968, 7.

48 Casson, Linder 1991, 67.

49 Casson, Linder 1991, 67.

50 Steffy 1991, 38.

objective was to sink or otherwise incapacitate an enemy ship through a high impact deliberate collision.[51] To be a viable and effective weapon, the ram had to be an integral part of the design of the vessel's hull which, in effect, transformed the ship into a high propulsion missile. Critical to this high-risk tactic was the attacking ship's ability to withstand the initial impact itself, and still be able to extricate itself immediately from the hull of the damaged enemy vessel, lest both ships sink together. The engineering design requirements to achieve the seemingly opposing objectives of initial high impact followed by immediate reverse thrust were considerable, and were unlikely to have been discovered by chance. On impact, a 50 ton ship can generate up to 40 tons of transverse force, a ramming-power derived from a combination of the weight and speed of the attacking vessel which was transferred through the hull and concentrated at the point of impact on the small surface area at the face of the ram.[52] The ram needed to be able to cope with the enormous force generated by the rapid deceleration of the attacking ship and absorb and speedily disperse the resultant stresses evenly throughout the hull to minimise the risk of structural failure.[53] As a controlled collision between two heavy moving objects with the point of highest impact occurring at one of the most vulnerable parts of the hull, the engineering requirements of ramming were many and complex.

Extant iconographic evidence of archaic ships shows many of them having waterline protrusions at the bow. Traditional scholarship has argued that these are rams, pure and simple, and that they existed as far back as the 8th and 9th centuries.[54] A more likely explanation for the function of these bow features, however, is that they were cutwaters, a standard feature in many ships (including modern ones) designed to improve hydrodynamic performance by reducing the effects of bow-waves and thus increasing forward motion efficiency.[55] Some of the representations indicate the bow projection timbers had metal sheaths which the early ram advocates say bolsters their case. But archaeological evidence to date indicates the complete opposite, as large-scale bronze hollow-casting (large enough to make a ram) did not exist in Greece until the mid-6th century.[56] This position is given further credence by Pausanias who says the first bronze statues in Greece were made from metal sheets held

51 Steffy 1994, 277.
52 Morrison et al. 2000, 222.
53 Steffy 1991, 33–38.
54 Casson and Linder 1991, 67.
55 Mark 2008, 256–257.
56 Rolley 1986, 27, 42.

FIGURE 4 *Olympias* ram in action
THE TRIREME TRUST ARCHIVE AT WOLFSON COLLEGE, CAMBRIDGE

together by rivets and that 'the first smelters of bronze and casters of statues were the two Samians, Roikos son of Philaios, and Theodoros son of Telekles' (Paus. 3.17.6; 8.14.5).

The metal sheathing in these ram-like projections was therefore most likely to have been hammered metal: sufficient to provide protection against floating debris and shipworm, but wholly inadequate to withstand repeated ramming because of its thin and brittle structure. In summary, the bow protrusions seen in the iconographic evidence are most likely cutwaters, which, undoubtedly, evolved into rams; but prior to the 6th century they were not designed as rams. Many of them have conical shapes, a structure which would render them unlikely to be able 'to absorb the shear stress resulting from ramming a moving ship.'[57] But this was a period of evolution in Greek naval technology and tactics, and whether designed specifically as rams or not, there is little doubt that in *extremis*, as in the instance of the vastly outnumbered Phocaeans at Alalia (535), the bow projections were sometimes used as rams.

Still, the early appearance of the conical forefoot and its persistence in iconographic representations of oared galleys over many centuries requires an explanation. The hypothesis that the conical forefoot was a cutwater that enhanced the overall hydrodynamics of the hull and the overall speed of the vessel is precisely one of the questions that a recent programme of extensive testing by a multidisciplinary team set out to answer. The experimenters concluded that, 'While this test does not rule out the possibility that the early projecting bow was used as an offensive weapon, it accords well with the possibility that the projection was originally developed for an increase in hull speed.'[58]

Important new archaeological evidence has emerged from recent scientific analysis of the Athlit ram discovered off the coast of Haifa, Israel in 1980. Weighing 465 kgs. it is a rare example of a large bronze cast made for banausic rather than commemorative or votive purposes. It is a three-pronged ram and is most likely to date from the 3rd century.[59] The initial technical investigations and metallurgical analysis of this ram were carried out before the hull timbers were removed and so only the surface of the ram was examined. These preliminary studies concluded that the ram was manufactured using sand-casting techniques for which there was no previous archaeological evidence for its use

57 Mark 2008, 261.

58 Murray et al. 2017, 81.

59 In broad terms bow projections can be seen to have evolved during the archaic period from early stage conical cutwaters to boar-head shapes in the 6th century to fully fledged three-pronged rams in the 5th century specifically designed to inflict maximum damage to hull timbers along the water-line.

before the Medieval period.[60] However, subsequent, more extensive investigations have resulted in these conclusions being revised extensively.

Our knowledge of Greek bronze casting and foundry practices is derived primarily from the archaeological record which confirms the use of the lost-wax casting technique for both large and small bronzes.[61] There were two types of lost-wax production, the indirect and the direct lost-wax method. The indirect was ideal for replicating numerous identical bronzes such as multiple votive offerings, while the direct method was suitable for making custom-built individual designs.[62] As the bows of triremes, even those constructed by the same shipwright, could not be made to exactly the same specifications,[63] the direct lost-wax method was used to cater for these inconsistent bow shapes by making the rams custom-fit each bow. The conclusions of the most recent technical analysis of the Athlit ram are that, unlike other classical period Greek large-scale bronzes, it was cast as a single unit, probably on site at the shipyard, and involved close collaboration between the bronze founders and the shipwrights.[64]

The first known use of the Greek word for ram (ἔμβολος) is from a mid-6th century fragment of Hipponax which, coincidently, also contains the first extant literary reference to a trireme. Hipponax, then based in the Ionian city of Clazomenae, implores the painter Mimnes 'not to go on painting a snake on the many-benched side of a trieres, so that it seems to be running away from the ram towards the helmsman'.[65] The earliest extant evidence we have from the literary sources for the use of ramming is from an account of a naval battle of Alalia (535) between the Phocaeans and a combined naval force of Carthaginians and Etruscans off the coast of Sardinia (Hdt. 1.166).[66] Though outnumbered two to one the Phocaeans were victorious but, as Herodotus puts it, 'the twenty that remained were useless, their rams twisted awry' (ἀπεστράφατο γὰρ τοὺς ἐμβόλους, Hdt. 1.166.2). It is unclear whether the rams of the Phocaeans' galleys were pointed or of the blunt, 'boars head' types that are attested on Athenian pottery from the second half of the 6th century.[67] Given the extent and type of damage it is more likely that they were of the pointed variety. Commenting

60 Oron 2006, 63.
61 Oron 2006, 73.
62 Haynes 1992, 35–38.
63 Steffy 1994, 61; Murray 1991, 73–74.
64 Oron 2006, 75.
65 Morrison et al. 2000, 34–35.
66 Morrison et al. 2000, 27–30.
67 Morrison, Williams 1968, 81.

on the significance of this first literary reference to ramming, Robert Strassler says, 'it is possible that this awkward image of damage is indicative of newly emergent technology and tactics.'[68] The bronze casting techniques required to make large rams resulted from innovations that facilitated large-scale bronze casting of statues, a practice which began to proliferate throughout Greece at this time.[69]

Trireme warships had specific design features which meant they were purpose-built for ramming, in contrast with the 9th to the 7th century longships which 'did not utilize a ramming timber or ramming assembly.'[70] Thus, the representations of bow projections on Geometric galleys and other preclassical ships, are more reasonably interpreted as cutwaters and not rams.[71] The introduction of a truly functional ram, one designed specifically for ramming, necessitated significant ship-design innovations which in turn facilitated radically new naval battle tactics and manoeuvres.[72] Warship rams are an extremely rare artefact with only four being discovered prior to 2004: Belgammel, Athlit, Bremerhaven and Piraeus.[73] Since then, some 7 more rams have been recovered from the Egadi naval battle site off Sicily, which are of the same horizontal three-fin design as the previous discoveries.[74] In contrast with the iconographic representations of earlier conical and so-called boar-head forefoot designs, this material evidence of rams from actual warships, albeit from a later period, are of a completely different design comprising a common horizontal three-fin structure. And so, as the above discussion indicates, the archaeological and scientific evidence would seem to confirm Mark's conclusion that the true bronze waterline ram, designed for purposeful offensive ramming, was not introduced until the 6th century and probably not before 550.[75] It was also during the 6th century, at the same time as the emergence of the ram, that another significant innovation in Greek shipbuilding design occurred.

68 Strassler 2007, 830.
69 Mark 2008, 270.
70 Murray et al. 2017, 76.
71 Mark 2008, 256.
72 Murray et al. 2017, 73.
73 Tusa et al. 2012, 12.
74 Tusa et al. 2012, provides a comprehensive archaeological review of these rams.
75 Mark 2008, 270–271.

3 Greek Innovation in Nautical Design

Until recently the consensus has been that ancient societies were not successful at inventing,[76] adopting or adapting new technologies.[77] As Cipolla has pointed out, this consensus is based partly on a 20th century bias in which a mechanistic age, unsurprisingly, identifies technological innovation with mechanics and thus fails to appreciate forms of non-physical innovations such as alphabetization and coinage and even physical ones, because they were in architecture and construction.[78] The discovery of the Antikythera mechanism[79] is a fortuitous reminder that ancient Greeks had the intellectual capacity to understand the complex principles of the mechanics of motion and, moreover, apply them in the creation of functioning technical products.[80] According to Mokyr, 'shipping was crucial to the economies of the Mediterranean in classical times, when prosperity depended primarily on commerce, that is, on the gains from Smithian growth.' Yet, despite its economic significance he concludes that, 'in shipping, too, advances (in technology) were modest'.[81] Even within the narrower field of maritime scholarship, some continue to argue that not just Greece but much of the Mediterranean suffered from a dearth of maritime technological innovation.[82] For instance, Casson claims that 'throughout the whole of ancient times, up to, say, the middle of the first millennium A.D., seagoing merchantmen of the Mediterranean were built, rigged, and steered in the same way'.[83]

Similar to its treatment of the ram, scholarship to date has argued consistently for the early prevalence of the use of the mortise-and-tenon method in Greek shipbuilding.[84] Using both etymology and iconography, it argues that the

76 Finley, 1973 147; Hodges 1970; Lee 1973.
77 Mokyr 1992, 9.
78 Cipolla 1980, 168.
79 Freeth 2006, 587. Sometimes referred to as the first analogue computer, the Antikythera mechanism was a sophisticated mechanical device built sometime in the 2nd century BC and designed to track the movement of stars and planets with a view to making astronomical predictions.
80 Price 1975, 48. The claim by Price that the Antikythera discovery proves that the ancient Greeks 'could have built almost any mechanical device they wanted to' is par too strong.
81 Mokyr 1992, 24.
82 Harris 2011, 11. The discussions related to commercial trading vessels and merchantmen but there is not suggestion that naval vessels or triremes were excluded from the innovation malaise.
83 Casson 1994, 152.
84 Casson 1995a, 217–219.

construction of ships in Greece was based on the mortise-and-tenon method as far back as the 8th century, and that it largely replaced the sewing or lacing of hull planks.[85] Due to the paucity of alternative information, this line of argument has relied heavily on a passage in Homer's *Odyssey* for its information on the detail of archaic shipbuilding. The tools Odysseus uses to build his ship (sometimes translated as raft) are all identified: an axe to fell and shape the wood, an adze to smooth and a drill to bore holes for the fasteners. The critical part of the description of his shipbuilding efforts (*Odyssey* 5.243–261) says that 'he bored them all and fitted them together, and then with pegs and fasteners did he join it together' (τέτρηνεν δ' ἄρα πάντα καὶ ἥρμοσεν ἀλλήλοισιν, / γόμφοισιν δ' ἄρα τήν γε καὶ ἁρμονίῃσιν ἄρασσεν, *Odyssey* 5.247–248). While the sense of the passage is clear, the controversy centres on the translation of the words γόμφοισιν and ἁρμονίῃσιν which Casson translates as 'pegged mortise-and-tenon joints'[86] and Liddell and Scott as 'a fitting together, a joint'.[87] As a result of this it is claimed that, 'the building of Odysseus' makeshift boat as described by the eight-century poet of the *Odyssey* (5.243–261) can be recognised as true shipbuilding now that underwater archaeology has shown us how ancient ships were built.'[88]

However, this is a line of argument that demands far too much of the weak etymological structure upon which it rests. It is also undermined from within Homer when, in the *Iliad*, the poet describes the mounting problems besetting the Greeks at Troy, 'and the planks of our ships have rotted and their cords have loosened' (καὶ δὴ δοῦρα σέσηπε νεῶν καὶ σπάρτα λέλυνται, *Iliad* 2.135)—a clear reference to sewn/laced shipbuilding. On the assumption of a Homeric consistency denoting laced shipbuilding in the archaic period and based on the description of the tools used, Odysseus' ship was built with dowels and pegged lacing.[89] To avoid the danger of falling prey to Homer's siren song in drawing overarching conclusions based solely on limited philological evidence, it is important to seek corroboration from archaeological sources where possible. In this instance, despite claims to the contrary, a closer analysis of the detailed results of more recent maritime archaeological discoveries also fails to back-up the claim that mortise-and-tenon was at the heart of Greek shipbuilding from the 8th onwards.

85 Morrison et al. 2000, 183–184.
86 Casson 1995a, 217–219.
87 LSJ, 2007.
88 Morrison et al., 2000, 183.
89 Mark 2005, 35.

The last few decades have seen a dramatic reassessment of the role of technological innovation in ancient Greek ship construction and design.[90] One of the leaders of this renaissance in nautical archaeology summarises the current position in the following terms: 'The ancient Greeks contributed appreciably to the development of shipbuilding technology, a necessity brought on by the enormous expansion of the empire. Trade routes became longer, cargoes more specialized, and the need for larger, stronger, and more serviceable vessels undoubtedly brought about more sophistication and experimentation among shipwrights. Along with the expansion of the empire came an expansion of naval forces, and stronger and larger naval galleys were a hallmark of the Greek empire.'[91] As a consequence, a debate began which in recent decades has 'clearly demonstrated that ancient ship construction was much more complex and much richer than it had first appeared.'[92] In the latest phase of this revived interest in maritime archaeology, there is a noticeable shift away from a concentration on detailed descriptive studies to ones in which more consideration is given to the wider impact of maritime innovation especially in the economic sphere.[93]

Within the late archaic transition, we have several important variables which in combination had compounding effects in terms of outcomes and consequences. First, there were significant endogenous institutional factors which had a significant impact on the costs and performance of Greek maritime trade in which Athens had become a very significant player. These included enhanced state formation as a result of Cleisthenes' reforms, and the advent of an Athenian polis navy. The combination of these helped reduced the costs of predation, improve transaction costs and reduce financing costs.[94] Second,

90 Pomey 2004, 25. Ancient Mediterranean ship construction techniques were a long-neglected subject until the 1960s, when L. Casson 1963, 28–33, 1964, 81–94, began to apply the Nordic construction categories of O. Hasslöf 1958, 49–60, shell-first or frame-first, to the Mediterranean shipbuilding tradition. Since the 1970s, P. Pomey, current director of CNRS at Aix-en-Provence University, has conducted an extensive naval archaeology programme in which the original discovery of the shift in Mediterranean naval construction from sewn/ligature to mortise-and-tenon was discovered. The important article which first articulated this hypothesis (quoted below) was originally published in 1997: Pomey P. 1997. 'Un exemple d'évolution des techniques de construction navale antique: de l'assemblage par ligatures a l'assemblage par tenons et mortaises' in D. Meeks, D. Garcia (eds.) 1997. *Techniques et économie antiques et médiévales: le temps de l'innovation*, pp. 195–203, Paris.

91 Steffy 1998, 53.

92 Pomey 2004, 25.

93 Wilson 2011, 211.

94 Kohn 2001, 2; Scheidel 2011, 21–25.

there was an intense process of nautical innovation which saw the rapid adoption of major new ship design and construction techniques within the Greek Aegean. This more recent scholarship also confirms that this Greek nautical design evolution began as part of the late archaic transition process and continued throughout our period: 'For about three centuries, from the beginning of the sixth century BC to the end of the fourth century BC, comprehensive evolutionary steps in Greek ship construction are evident in the Mediterranean. They started with a round sewn hull, with widely spaced full frames and top timbers, and finished with a wineglass mortise-and-tenon jointed hull'.[95] In terms of their impact on trade, the current consensus seems to be that institutional factors had a greater impact than the advances in maritime technology, a position summarised by Wilson as follows; 'These technologies then enabled the new institutional conditions to be exploited more fully, with larger ships, safer harbours and lower transport costs.'[96]

One of the earliest pre-classical Aegean vessel to be thoroughly investigated by nautical archaeologists is a Greek trading ship referred to as Pabuç Burnu which sank sometime between 570–560 off the Turkish coast near modern Bodrum.[97] There are two aspects of this find which are of particular interest for our analysis: the first relates to the cargo; the second, of more immediate interest, is the hull design. The cargo of the Pabuç Burnu consisted of agricultural goods, probably wine and oil, contained in up to 260 eastern Aegean amphoras, in addition to considerable remains of grapes or raisins and olives which presumably were held in perishable containers such as sacks or baskets.[98] This total cargo of an estimated 10 metric tons of both wet and dry agricultural produce, carried in a moderately sized merchant ship (17–18M), is important archaeological evidence for the presence of small-scale agricultural production and exchange within the eastern Aegean in the late archaic economy. It is also a valuable evidential counter-weight to the predominant discourse of luxury trade in the archaic period.

For our assessment of the state of maritime construction technology, of more immediate interest are the remains of the Pabuç Burnu's hull. There are two basic techniques in ancient timber hull construction. There is the 'shell-first' method which involved the assembly of a shell of planks from the keel up with each plank fastened to its neighbour by a variety of methods. The other, and much later construction technique, is known as the 'frame-first' in which

95 Kahanov et al. 2004, 25.
96 Wilson 2011, 8.
97 Catsambis et al. 2011, 364.
98 Greene et al. 2008, 703–704.

the hull planking was bent around and attached to a pre-erected timber skeleton or frame. The transition away from the canonical 'shell-first' method did not occur until the late 6th century A.D. when shipwrights began to rely less on the integrity of ships planking.[99] As with virtually all ships in antiquity the Pabuç Burnu's hull was built 'shell-first'.

Apart from the method of constructing the hull, the single most important aspect of archaic ship design was the manner in which the planking was joined together at the edges. This was not only important for aligning the planks during the actual assembly process, but the choice of edge joinery employed had a significant bearing on the overall strength and sea-worthiness of the vessel. Two predominant techniques for plank joinery emerged during the archaic period: the sewn/laced method and the mortise-and-tenon method.[100] In the laced technique small holes were made along the edges of adjoining planks through which a ligature was drawn to secure the timbers together. The ligatures themselves were then secured in place with small wooden pegs. The assembled planks were then made fast to a wooden transvers frame to give added structural stability. Ligatures laced in a symmetrical double-helical pattern combined with oblique ligature holes and the use of seam wadding is argued by some to be archaeological evidence for a uniquely Greek laced construction tradition.[101] This position is also endorsed by Pomey: 'La technique d' assemblage par ligatures, caractérisée par de nombreux éléments tels que le recours aux évidements tétraédriques ou la morphologie particulière des membrures, apparait dans toute sa spécifié comme une technique liée au monde grec.'[102]

The second technique is the better-known mortise-and-tenon assembly method. In this technique, the hull planks were joined together with mortise-and-tenon joins which were locked in place on both sides of the plank seam with wooden pegs hammered in through both plank and tenon. Internal frames were then placed inside the hull and attached with double-clenched copper nails. We do not know when or where mortise-and-tenon joinery was first used in shipbuilding in the Mediterranean, but the archaeological evidence seems to indicate that the technique developed in the Levantine littoral and may

99 Catsambis et al. 2011, 386–389.

100 There is considerable inconsistency in ancient maritime design literature concerning terminology with laced construction often referred to as 'sewn' or 'sewn plank', 'laced' and 'ligature.'

101 Catsambis et al. 2011, 366.

102 Pomey 2010, 134. 'Introduction (3)', in Pomey (ed.) 2010.

FIGURE 5 Sewn/laced (left), mortise-and-tenon (right)
ORIGINAL WATER COLOUR ILLUSTRATION BY MIEKE VANMECHELEN

have then spread westward.[103] The pegged mortise-and-tenon construction of the Uluburun (c. 1300) and Cape Gelidonya (c. 1200) hulls appear to be the earliest known examples of this type of joinery. This archaeological evidence for a Levantine/Phoenician tradition of mortise-and-tenon ship construction from as early as the Late Bronze Age has encouraged traditional scholarship to conclude that Greek shipbuilding was also based on the mortise-and-tenon method from as early as the 8th century: by which time it had completely supplanted the sewn/laced method of hull-plank joinery.[104] The longevity of this Phoenician tradition of mortise-and-tenon technique would seem to suggest that its emergence within Greek shipbuilding was the result of a direct technology transfer from the Levant.[105] The Greeks had had extensive trading links with the Levant from at least the 8th century, and given that they were inveterate adopters of other people's inventions—money from Lydia, the alphabet from Phoenicia—if not a direct technology transfer then the demonstration effect of Phoenician practices must have provided a compelling stimulus for mortise-and-tenon adoption by the Greeks. Thus, while a Phoenician provenance seems most likely, extensive archaeological evidence is in profound conflict with the philologically derived arguments proposing the early adoption of the mortise-and-tenon technique within Greek naval architecture.

103 Kahanov et al. 2004, 25.
104 Morrison et al. 2000, 183–184.
105 Bass 2006, 14; Kahanov et al. 2004, 24–25.

Recent archaeological evidence as outlined in Table 1 does not support the early chronology posited by traditional scholarship. The analyses of more recent Mediterranean maritime archaeology provides convincing evidence for a much later Greek transition beginning in the late 6th century, the significance of which is summarised by Pomey: 'L'étude des épaves Jules Verne 7–9 à Marseille jointe à celles de nombreuses autres épaves a permis de mettre en évidence, d'une part, l'existence à l'époque archaïque d'une tradition grecque d'assemblage par ligatures, et, d'autre part, l'adoption au sein de cette tradition, dans la seconde moitié du VIe s. av. J.-C., de la technique d'assemblage par tenons et mortaises'.[106] Furthermore, he suggests that this evolution continued throughout the 5th century 'jusqu'à la fin du IVe s. ou l'épave de Kyrenia marque à la fois la fin de cette évolution et le début d'une nouvelle tradition.'[107]

From the evidence of the 14 Greek shipwrecks dating from the 6th to the 4th centuries in Table 1 there is a clear pattern in which from the last decades of the 6th century mortise-and-tenon joinery began to replace the sewn/laced method, 'qu'elle fut progressivement abandonnée au profit de l'autre système d'assemblage dit par "tenons et mortaises" dont les possibilités d'évolution étaient plus grandes.'[108] Even within this important transition there is further evidence for an intermediate phase in which 'tenons replaced dowels as coaks in laced construction, paving the way for the eventual supplanting of lacing by pegged mortise-and-tenon joinery.'[109] The process of transition does not seem to involve a sudden break, but was a process that evolved over a period of almost a century during which time both techniques were used in parallel. Indeed, in an archaeological coincidence, an example of each of the two traditions has been discovered in the same harbour at Marseilles: *Jules-Verne 9*, a coastal fishing boat, had the laced technique while the larger merchantman, *Jules-Verne 7*, had mortise-and-tenon as its primary construction method; yet both have been dated to the last quarter of the 6th century (525–510).[110] However, it is also important to note that there was a distinct pattern of tapering within the transition in which, by the end of the 6th century beginning with

106 Pomey 2010, 16.

107 Pomey 2010, 16.

108 Gianfrotta P. et al. (eds.) 1997, 92.

109 Polzer 2010, 27, 35, contains a valuable discussion of the importance of this innovation which within a few decades of its adoption saw Greek ships being built 'with predominantly pegged mortise-and-tenon joinery.'

110 Kahanov et al. 2004, 15–16, contains a detailed summary of the principal wrecks listed in Table 1. See also *Archaeonautica*, 1998, Vol. 14 No. 1, pp. 147–154.

Jules-Verne 7, the sewn/laced technique was used only in the bow and stern sections down to the end of the 5th century. The end of this dual technique usage is marked by the *Ma'agan Mikhael* 'ou l' usage des ligatures est beaucoup plus limite, marquée la fin de cette évolution avant l' adoption définitive du système par "tenons et mortaises" '.[111] Yet a further important innovation is evinced by the *Gela 2* and the later *Ma'agan Mikhael*,[112] the adoption of the wineglass hull design within Greek shipbuilding from the middle of the 5th century, 'qui augmente considérablement la stabilité du navire et ses performances notamment par vent de travers, voire contraire.'[113] Then, at the end of the 4th century, the final step in this gradual evolutionary process of Greek maritime innovation from laced to mortise-and-tenon is attested by the *Kyrenia* 'marque aussi le point de départ d' une nouvelle tradition architecturale grecque, entièrement fondée sur l' assemblage par tenons et mortaises.'[114]

The shift in naval architectural design to the new mortise-and-tenon technique conferred three important advantages which had concomitant economic benefits: superior tensile strength, greater durability and decreased maintenance costs—'dont les effets sur le plan économique ne devaient pas être négligeables.'[115] Additionally, the new construction method made possible ships with greater carrying capacity and increased length as the maximum length of ships constructed solely by the lacing method seems to have been around 25 m (see Table 1). For the Bronze Age the consensus is that seagoing merchantmen were probably no bigger than the Uluburun wreck at 16 metres in length and with a cargo capacity of 20 tons.[116] As Table 1 above indicates, from the 6th to the early 4th centuries the archaeological record would seem to suggest that there were no merchant vessels over 40 tons and that most were well below that size for our period. There is further corroboration for a merchant vessel size of around 30 tons for this period which comes from a calculation based on a customs inventory document for an unnamed Egyptian port for about 40 Ionian and Phoenician merchant ships in 475.[117]

111 Gianfrotta P. et al. (eds.) 1997, 92; Kahanov et al. 2004, 6,11.

112 Steffy 1994, 40–49.

113 Pomey 2011, 50.

114 Pomey 2011, 45; Steffy 1994, 56–57.

115 Pomey 2011, 48. Maintenance difficulties were experienced by the Achaeans at Troy when the ligatures holding the planks of their boats together began to rot. (Homer *Il.* 2.135).

116 Monroe 2007, 1.

117 Yardeni 1994, 67–78, quoted in Catsambis et al. 2011, 393.

TABLE 1 Transition in Greek boat construction technology[a]

Shipwreck	Location	Provenance	Date	Length (m)	Capacity (tons)	Primary joinery
Giglio	Italy	Corinth	600–580	25	n.a.	Sewn/lace
Pabuç Burnu	Turkey	Ionian	570–560	17–18	10	Sewn/lace
Bon Porté	France	Massalia	540–510	10	2–4	Sewn/lace
Cala Sant Vicenç	Majorca	Massalia	520–500	20–22	30	Sewn/lace
Jules-Verne 9	France	Massalia	525–510	9.5	3	Sewn/lace
Jules-Verne 7	France	Massalia	525–510	15.65	15	Mortise-and-tenon + lacing ends only
César 1	France	Massalia	510–500	10	n.a.	Mortise-and-tenon + lacing ends only
Grand Ribaud F	France	Massalia	510–490	25	30–38	Mortise-and-tenon + lacing ends only
Gela 1	Sicily	Magna Graecia	500–480	20	n.a.	Mortise-and-tenon + lacing ends + bottom
Gela 2	Sicily	Magna Graecia	450–425	18	n.a.	Mortise-and-tenon + lacing in repairs only
Tektaş Burnu	Turkey	Ionia	440–425	14	6–7	Mortise-and-tenon + lacing
Ma'agan Mikhael	Israel	Aegean	410–390	13.8	23	Mortise-and-tenon + lacing ends only
Porticello	Italy	Greece	400–385	16.6	n.a.	Mortise-and-tenon + lacing
Kyrenia	Cyprus	Rhodes	380–285	14	30+	Mortise-and-tenon

a The principal sources for this table are: Kahanov et al. 2004, especially the detailed table of wrecks on pp. 17–18; Polzer 2009, 99 especially Table 4.33 with details of hull planking construction for the same wrecks.

Based on this and the archaeological evidence summarised in Table 1, some modern scholarship assumes that most classical period ships did not have a cargo capacity beyond 50 tons and that the Kyrenia 'must have been a typical ship of the period.'[118] This is a position argued by Eiseman who also claims there was no economic motive to build ships over 50 tons during this period.[119]

118 Bresson 2016, 86.
119 Eiseman 1987, 109.

Wallinga was one of the first to make the case that Athenian grain ships had very significant carrying capacities of up to 260 tons, on the basis that 'the first people who imported big quantities of grain from oversea, also constructed the first adequate grain-ship. It could hardly be otherwise.'[120] Similarly, Casson has contended for decades that ancient Greek ships were sizeable: 'the capacity of seagoing freighters has been consistently and seriously underrated', a view partly founded on the Thasian port regulation of the second half of 3rd century which defines one harbour for ships under 3,000 talents (80 tons) and another for those under 5,000 talents (130 tons).[121] He also contends that from the 5th century on, the most common size of merchant ship was between 100 and 150 tons, adding, 'while those of from 350 to 500 tons, though obviously considered big, were by no means rare.'[122] The arguments of Wallinga and Casson for much larger merchantman tonnage is also supported by others, especially by Velissaropoulos, who suggests that the average Greek merchant ship of the 4th century was over 120 tons.[123] The case for the larger carrying capacity of Greek ships is further supported by the claim that the average payload of Athenian grain ships was 3,000 medimnoi (over 90 tons).[124]

As Adam Smith appreciated, the economic case for the importance of maritime transport in a non-mechanised age is unassailable.[125] The gains in labour productivity were enormous because it facilitated access to wider markets for greater quantities of goods at lower cost.[126] The division in modern scholarship on the question of the size of Greek trading vessels is essentially a reflection of two opposing models of Mediterranean trading: the one postulates the predominance of direct trading,[127] the other favours trade patterns characterised by cabotage or tramping—the former involving open water sailing in large ships while the latter was confined to coastal route sailing using smaller vessels.[128] In the case of classical Athens, recent scholarship contends that it was not ad hoc cabotage but direct trading that predominated, even to the extent that, 'it is legitimate to speak of a state policy toward trade.'[129] In this view

120 Wallinga 1964 25.
121 Casson 1995a, 171 n. 22.
122 Casson 1995a, 172.
123 Kron 2016, 36; Velissaropoulos 1980, 63.
124 Moreno 2012, 108.
125 Smith 2007 [1776], 12–13.
126 Robinson, Wilson 2011, 1.
127 Casson 1971; McCormick 2001.
128 Arnaud 2011, 61.
129 Woolmer 2016, 85, goes on to emphasise the important institutional aspects of this Athenian commitment to supporting inter-regional trade, including investments in 'infras-

therefore, these important transitions in nautical design and construction took place at a time when there was a switch to greater use of bulk cargoes, including grain and the stacking of amphorae in multiple levels for which hulls with sewn planking were ill-suited.[130] The limitations of the sewn/laced assembly with regard to ship length and carrying capacity and other important facets were clearly of considerable importance when it came to trireme construction (37 m and 50 tonnes, fully manned[131]).[132]

The speed (about 100 years) with which these major nautical innovations were deployed within the Greek maritime tradition contrasts with the normally conservative approach of shipwrights towards the adoption of new technology: 'Any one of these would be considered a major modification, which we would expect to take place over several centuries … The speed of these alterations therefore suggests a strong influence that broke the conservative pattern outlined earlier for shipwrights.'[133] The catalyst for these dramatic changes in Greek ship construction, Mark suggests, was the construction of increased numbers of state-financed fleets of triremes from the 6th century onwards. The adoption of the trireme in Greece posed a range of design challenges for contemporary Greek ship construction methods which would have included inter alia: a lower centre of gravity to accommodate the *parexeiresia*, a new framing system to improve rigidity, a wineglass shape for stability, the replacement of laced frame binding with nails, the integration of bow and keel timbers to accommodate a larger ram, and the exclusive use of mortise-and-tenon joinery throughout the hull.

As previously discussed, most scholarship accepts Thucydides' (1.13.2) statement that the first Greek trireme was constructed at Corinth but that he got the date wrong, with most authors opting for various times in the 7th century.[134] In line with the consensus, if we accept his incorrect dating then an arguable summation of Thucydides' position would be that the Corinthians were the first in Greece to build triremes and 'to adopt the modern style of naval architecture' (1.13.2), that navies consisted of penteconters and 'counted few triremes among their ranks' (Thuc. 1.14.1), and that the process of transition from the prevailing penteconters to triremes was a slow one such that it was only 'shortly before

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tructure, protecting merchants, and facilitating and supporting their activities through currency, officials, and courts, not to mention the creative ways in which they utilized their various forms of honours.'

130 Robinson, Wilson 2011, 8; Mark 2005, 61–67.
131 Morrison et al. 2000, 210.
132 Pomey 2011, 48.
133 Mark 2005, 68.
134 Morrison, Williams 1968, 158–161; Casson 1971, 80–81; Basch 1987, 332–333.

the Persian War' that Greeks 'acquired any large number of triremes.' (Thuc. 1.14.2). In this scenario, there was well over a century between the appearance of the trireme in Greece and its adoption as the principal ship-of-the-line by the Athenian navy towards the end of the 6th century. Meijer is very much in the minority in interpreting this Thucydidean passage (1.13.2–4) as not being about the invention of the trireme, arguing instead that it 'describes a development in shipbuilding which has no relation with the invention of the trireme.'[135] Meijer goes on to speculate that the unspecified naval invention has to do with the introduction of decking on triremes, a suggestion which Hornblower finds unattractive while accepting 'that Thucydides' remarks about Corinthian innovativeness go beyond the invention of triremes.'[136] To explore this aspect further we need to review the latest maritime archaeological research to see if it offers any support for Thucydides' 'technological innovation' in Greek shipbuilding.

Morrison, amongst others, has concluded that 'there is then no good reason why Thucydides' plainly stated account should not be accepted; that the trireme made its first appearance at Corinth in the end of the eighth century.'[137] On the contrary, there are several good reasons why Thucydides early dating for the introduction of the trireme in Greece is suspect. Herodotus states that Polycrates had a fleet of 40 triremes by 525 (Hdt. 3.44.2) and the first written reference to a trireme is in the Hipponax fragment (fr. 45 Diehl) from about 545. Despite an intense debate in the intervening almost 70 years since it was published, Davison's summation of these events has much to recommend it. Based on the literary evidence, he contends that penteconters remained 'the largest type of warship attested until 550 BC at least. At some time between 550 and 525 the trireme makes its appearance'.[138] If this mid-6th century chronology is accepted, then the most recent maritime archaeology relating to Greek shipwrecks would suggest that in terms of nautical design 'les premières trieres étaient probablement assemblées par ligatures selon la tradition en usage à l'époque sur les chantiers navals grecs.'[139] Pomey considers these early triremes with sewn hulls were not optimum to cater for their increased size and the stability issues presented by the third tier of rowers and as such 'ne devaient pas présenter la fiabilité suffisante pour être intégrées effi-

135 Meijer 1988, 461.
136 Hornblower 1991, 43.
137 Morrison 1979, 62.
138 Davidson 1947, 23.
139 Pomey 2011, 51.

cacement dans les flottes de combat.'[140] However, it was the introduction of the mortis-and-tenon construction method during the last decades of the 6th century, 'a sans doute apporte la solution technique au problème de la trière.'[141] The mortise-and-tenon hull assembly method was most likely originally developed by the Phoenicians, just like the trireme itself, but the Greeks did not immediately adopt the new assembly method because it represented a radical change in shipbuilding techniques.[142]

This reluctance to shift immediately to a completely new fabrication system can be understood in path dependence terms. As we have seen in chapter 3, the build-up of behavioural routines and the institutions which support them make the cost of changing from a long-established path extremely costly. For centuries Greek ship construction had been based on the sewn/lace method and for a whole industry this represented a considerable investment in terms of knowledge and expertise. Changing to mortise-and-tenon not only necessitated learning a whole new set of construction techniques, but it also required a new understanding of the implications of these new techniques for the overall performance of the vessel at sea and its stability under the stresses and strains of bad weather and combat duty. For such reasons, the enormous levels of sunk costs in an industry like shipbuilding make rapid radical technology shifts very unlikely which, as we have seen, explains the gradual evolution of these nautical innovations from the 6th to the 5th centuries. One of the most significant transitions in nautical design was from shell-first where the planks themselves provided the main structural support to frame-first in which the hull structure was provided by a skeleton frame to which the planks were nailed. It was a gradual process from the 4th century A.D. to the 9th century A.D. during which both methods continued to co-exist in parallel for some time before, however, driven by cheaper costs of both materials and labour, the frame-first system finally prevailed.[143] In a similar manner, even though mortise-and-tenon began to replace sewn-plank construction in the late 6th century in Greece, sewn plank boats were still in use up to the 11th century A.D. in Italy.[144]

140 Pomey 2011, 51.
141 Pomey 2011, 51.
142 Pomey 1997, 201. An example of path dependence persistence of an inferior technique because of the high costs of learning new construction techniques and new skills. Then a 'trigger event' (the need for better designed triremes, possibly) causes the new innovation to be adopted which then proliferates very quickly, exactly like the transition to mortise-and-tenon as the evidence in Table 1 suggests.
143 Wilson 2011, 218–219; Steffy 1994, 79–91; Pomey, Rieth 2005, 166–167.
144 McGrail 2001, 136–137.

All of which raises the unresolved issue of what caused this remarkable, archaeologically-attested transition in Greek shipbuilding beginning in the late 6th century? As discussed above, the case for increased trade and need for bulk carrying capacity for both grain and amphoras has considerable merit.[145] Though we are without evidence, either in the form of a wreck or a literary description of construction, it would seem very likely that the proliferation of triremes in the Greek world from the late 6th century was connected with this period of radical innovation in ship construction and design.[146] It is certainly unlikely to have been coincidental, because design features specific to the trireme, such as the *parexeiresia*, could not have been implemented without the stability offered by the wineglass hull innovation.[147] It is entirely conceivable that the requirements to create as stable a platform as possible for marines while coping with the enormous stresses of ramming 'may well have accelerated, if not initiated, this innovation and development in Greek shipbuilding.'[148]

145 Mark 2005, 63–66.
146 Mark 2005, 68.
147 Pomey 2011, 51.
148 Polzer 2010, 36.

CHAPTER 9

Naval Defence Infrastructure

Recovering reliable figures for construction projects in classical Athens has been notoriously difficult. Yet, as Gabrielsen reminds us, 'no modern calculation of the costs of the fleet can be complete without taking into account the expenses relating to the land-based infrastructural facilities.'[1] Unfortunately, the acuity of his observation is matched only by the regrettable incapacity of our sources to accommodate its aspirations, other than in a most rudimentary manner. In the light of this, the evidence that we may adduce is of necessity conjectural and, on the occasions where figures are presented, they should be considered as broad apportionments.

In his analysis of the Lycurgan building programme, Burke recognises these limitations: 'Admittedly, there can be no precision in estimating the cost of this building program, but we might fairly hazard some parameters.'[2] Burke accepts that precise figures for the costs of the Lycurgan civil and military building programme remain elusive. But while recognising that 'pay for naval service would have constituted the largest of the city's new expenses', he speculates that if the construction expenditure had been on a par with that of Pericles in the 5th century, it would have amounted to 200 talents per annum.[3] However, the two most expensive construction projects of the Periclean building programme were the Parthenon and the Propylaea which cost 460 and 200 talents respectively, an average of 51 talents for the 15 years it took to complete their construction,[4] significantly less than the average annual Lycurgan construction figure of 200 talents.

Though still the most authoritative treatment of the subject, Boersma's *Athenian Building Policy From 561 to 405/4 B.C.* contains no analysis of building costs. Its only reference to such costs relate to the rebuilding of the Temple of Apollo at Delphi in the mid-6th century, which according to Herodotus cost 300 talents (Hdt. 2.180.1). Apart from it being suspiciously round, the figure of 300 talents is likely to have been heavily inflated as it was part of a propaganda ploy by the exiled Alcmaeonid clan to regain control of Athens by bribing the

1 Gabrielsen 2014, 41.
2 Burke 2010, 400.
3 Burke 2010, 400. Though a large absolute sum, 200 talents represented about one-sixth of total annual state revenues during the Lycurgan period.
4 Pritchard 2015, 50.

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Oracle to urge all Delphic visitors to 'free Athens' (Hd. 5.62.2). Despite its dubiousness, Boersma uses this 300-talent figure, and the fact that a trireme cost one talent to build, as the basis for concluding that the construction costs of the Peisistratid building projects of the Agora and the Pynx were likely to have been 21 talents. His reasoning: because the figure of 21 talents was 'one-fifteenth of the building costs of the temple and sufficient to construct twenty-one warships', his concluding non-sequitur is that this figure 'must have been enough to finance the greater part of the Agora and Pnyx projects.'[5]

As with ancient literary sources, modern writers on Greek architecture have also largely ignored these monumental military buildings. Indeed, Boersma has only this to say regarding the extensive naval constructions of classical Athens: 'The few secular utilitarian projects known from this period need only to be mentioned briefly: the growth of the fleet necessitated the building of dockyards and the maintenance of harbours'.[6] Similarly, writing in 2001 about public buildings in the Greek economy, J. Salmon makes no reference to the shipsheds or dockyards at Piraeus in his discussion of classical Athens.[7] Even more surprisingly, neither does Gabrielsen in his detailed analysis of the classical Athenian fleet. Though he provides a comprehensive analysis of their administrative structures, he makes no attempt at determining the construction costs or economic significance of the shipsheds and dockyards.[8] Despite these deficiencies, and notwithstanding the cautionary exhortations of the introductory paragraph above, there is one example of building cost analysis which for our purposes is of direct relevance. Jari Pakkanen's detailed costings of the construction of the shipsheds of Piraeus (see below) embraces an innovative approach which not only greatly advances our current knowledge of these military structures but offers an invaluable template for extending the exercise in the future studies.[9]

1 Shipsheds

From the outset, shipsheds and triremes went hand in hand. According to Herodotus, it was Polycrates who was the first to have 'sheds built to shelter his ships' (Hdt. 3.45). Despite their cost, scale and military importance, there are

5 Boersma 1970, 34.
6 Boersma 1970, 80.
7 Salmon 2001, 195–208.
8 Gabrielsen 1994.
9 Pakkanen 2013, 55–75.

few references in the literary sources to the existence of shipsheds or dockyards for the 6th century yet, 'there is now growing archaeological evidence for shipshed construction as early as the turn of the sixth/fifth century.'[10] Herodotus' reference to Samian mid-6th century shipsheds (Hdt. 3.44–45) occurs just as the trireme was emerging as the preferred ship-of-line warship in Greece, and just a few decades before we have evidence for poleis navies: a good indication that the naval triad of polis navies, triremes, and on-shore naval infrastructure all emerged during the second half of the 6th century.

In the case of Athens, the triad represents the essential components of its strategic vision, which grew exponentially from the early 5th century and included the expansive trireme building programme, the development and fortification of Piraeus and its harbours, and the construction of the Long Walls. The unprecedented expense of building these unique warships made it economically sensible for poleis to protect their valuable trireme investments by constructing extensive shipsheds in which to house them. The importance with which the Athenians regarded their triremes is evident from a fragmentary inscription of 440–425 which specifies the minimum number of men required for the critical phases of hauling out (140 men) and launching (120 men) triremes[11]—and it is safe to conclude that it was the health and safety of the ships and not the men that was at issue. Most shipshed complexes throughout the Greek world were built within the walled precinct of the usually well-fortified polis harbour, of which Piraeus is the supreme example.[12]

Athenian maritime hegemony of the Aegean during the classical period was founded upon its extensive fleet of warships. Designed as a highly manoeuvrable warship, the trireme's attack effectiveness relied on a subtle trade-off between weight and strength. With the design priorities being relative lightness combined with tensile strength, the timbers used in trireme construction came with some significant drawbacks. Highly susceptible to water-logging and attack by shipworm, they had to be taken out of the water when not in active use.[13] During the ill-fated Sicilian campaign, Thucydides describes the rapid deterioration that befell the Athenian fleet at Syracuse because they were unable to beach their triremes (Thuc. 7.12.3–4). Once out of the water triremes

10 Blackman, Rankov 2013, 19.

11 *IG* 1^3 153.

12 Rankov 2013, 76.

13 Harrison 2003, 78–84. She marshals credible literary evidence that triremes did not have to be taken out of the water every night and that Athenian mariners employed effective care and maintenance procedures to mitigate the deleterious effects of shipworm. *Contra* Steinmayer and Turfa 1996. Steinmayer A.G. and Turfa J.M. 1996, 'Effects of shipworm on the performance of ancient Mediterranean warships'. *IJNA* 25.2: pp. 104–121.

needed to be protected from the sun lest the timbers split by drying-out too quickly, leading inevitably to leaking which would render them unseaworthy.[14] Yet, triremes also had to be ready for launch at short notice.

Mindful that these triremes were the source of its political, military and commercial dominance, Athens expended considerable resources in maintaining, preserving and protecting these vital if fragile naval assets. Athens built an extensive complex of shipsheds (νεώσοικοι)[15] to store its fleet of triremes at three harbour locations in the Piraeus—Zea, Kantharus, and Mounichia. The functional breakdown of the three harbours has also been successfully identified with Kantharus having both a commercial and naval function, while Zea and Mounichia served exclusively as naval harbours.[16] Such was the scale of these constructions that the shipsheds at Piraeus constituted one of the largest roofed public buildings in antiquity. As symbols of their newly acquired hegemonic naval status, Athenians took considerable pride in these monumental buildings. Athenian investment in naval infrastructure continued throughout our period. In the second half of the 4th century, the 20-year period between 350 and 330 saw 100 new shipsheds being built at a cost of 150 talents, an undertaking that involved a workforce of up to 150 men annually.[17] Such was the scale of new shipshed construction during the first three-quarters of the 4th century that by 330/29, according to the Naval Records, the naval shipyards at the three harbours of the Piraeus contained a total of 372 shipsheds (*IG* 22 1604–1632).

As with the Long Walls (see below), it is difficult to calculate the total cost of building the shipsheds at Piraeus because they were not a single one-off construction project. Quite the contrary, they were built in phases over their 150-year active life and, on one celebrated occasion, destroyed completely by the Thirty Tyrants (404). In the subsequent decades, as Athens re-gained her economic and military power, they were extensively re-built in tandem with the expansion of the trireme fleet before finally falling victim to the depredations of Sulla (86). Their staggered development and the resultant cost-calculation difficulties it poses should not however disguise the substantial investment that this architecturally complex and strategically important naval infrastructure

14 Lovén 2011, 2.

15 A compound of the genitive of ναῦς (ship), νεώς, and οἶκος (house), lit. ship's house. The accepted English spelling is the un-hyphenated 'shipshed'. On the other hand, νεώριον (sg.) 'dock-yard' and νεώρια (pl.) 'dock-yards' refer to the wider complex of naval installations including storage halls for gear, shipbuilding yards (ναυπήγια), an arsenal as well as the shipsheds.

16 Lovén 2011, 42.

17 Pakkanen 2013, 73.

FIGURE 6 The shipsheds at Piraeus
ORIGINAL WATER COLOUR ILLUSTRATION BY MIEKE VANMECHELEN

represented for Athens: a contention which the following snap-shot financial costings should help to corroborate.

The standard methodology in archaeology for quantifying the construction costs of ancient buildings is by means of labour time units or man-days. For these manpower calculations the essential assumptions relating to labour-time involved is derived from a combination of archaeological experiments, ethnographical studies, and textual sources.[18] The wage rate for a skilled workman in 5th century Athens was 1 drachma per day, rising to 2 drachmas by mid-4th century.[19] However, the building of shipsheds did not require the exclusive use of skilled labour and so the Piraeus shipshed costings are calculated on the basis of a mix of labour types, including both unskilled at 25%, and 10% for supervisory labour.[20] As in all such projects, as evidenced by the building of the Parthenon, both slaves and citizens were likely to be employed by the contractors who carried out the construction, which may have implications for these calculations: though clearly the owners of the slaves had to be paid.[21]

18 Pakkanen 2013, 56.
19 Loomis 1998, 104–120.
20 Pakkanen 2013, 62.
21 Burford 1963, 34.

Based on these figures, Pakkanen estimates that the total cost of a group of 10 shipsheds, including labour and materials but expressed in man-days, was 40,000, or 4,000 man-days per shed. In monetary terms, this translates into 4,000 drachmas or two-thirds of a talent for each shipshed. Another way to look at this is that it would have taken a little over 150 men one working year to construct the 10 sheds and when unskilled and supervisory labour is factored into the calculation; 'it is unlikely that the total work-force required would have been more than 200 men for the duration of the building season.'[22]

Once built, the costs of maintaining the shipsheds at Piraeus has been estimated at a little over 4 talents per annum, on the assumption that about 100 men were involved in this activity.[23] For the reasons indicated above, a once-off building cost calculation greatly underestimates the true cost of constructing the shipsheds at Piraeus. However, for purposes of illustration, the once-off costs of building the 372 shipsheds at Piraeus would run to a total of 250 talents: or about half the costs of building the Parthenon at 500 talents.[24] However, the most expensive material used in the construction of the Parthenon was pentelic marble, compared to the much less expensive limestone used for the construction of monumental naval structures. Thought we have little or no direct source evidence for the cost of these enormous labour-intensive infrastructure projects, the calculations above indicate clearly that they involved very large investments. Investment in infrastructure on this scale over many years could not have been undertaken without the extensive resources of a vibrant diversified economy.

2 The Athenian Circuit Walls

Thought there is literary support for pre-existing archaic period walls (Hdt. 9.13; Thuc. 1.89.3, 1.93.2, 6.57; Andoc. 1.108), the absence of secure archaeological remains leaves this an open question. On the other hand, substantial archaeological evidence identifies the existing remains as the circuit walls of Athens built as part of its post-Persian War defence strategy (Thuc. 1.90.3–4), dated to the year 479.[25] This defensive structure combined with the Long Walls, the Phaleric Wall and the Piraeus Circuit Walls, effectively cut off a huge segment

22 Pakkanen 2013, 72.

23 Pakkanen 2013, 73.

24 Stanier 1953, 68–73. His estimates for building the Parthenon are 460 but he believes in reality it cost more, so I have rounded the figure to 500 talents.

25 Theodoraki 2011, 71.

of Attica and provided a security corridor linking Athens with Piraeus (Thuc. 2.13.7). Archaeological evidence also confirms Thucydides' remarks that the walls were hastily constructed with considerable re-use of stone material: 'the building shows signs of the haste of its execution … they laid hands on everything without exception in their haste' (Thuc. 1.93.2).

One of the first excavators to survey the remains of the walls, while noting this haste, commented that 'the construction was carried out in such a way as to ensure the greatest possible stability.'[26] Evidence for several large fortified gates with towers, each with an internal courtyard, have been discovered at the Dipylon Gate and the Sacred Gate. These would appear to be Athenian innovations, as such features are rarely seen on Greek fortifications prior to 450.[27] The Athenian defensive walls were demolished at the insistence of the Spartans at the end of the Peloponnesian War. However, following the destruction of the Spartan fleet at the Battle of Knidos at the end of the Corinthian War, Conon rebuilt the walls in 394, at considerable cost as the evidence would suggest. (Xen. Hell. 4.8.9; Diod. 14.85.3). Demosthenes later considered this rebuilding of the walls to signal the beginnings of the re-establishment of Athenian hegemony following her defeat by Sparta (Dem. 20. 72).

3 The Piraeus

The drive for naval supremacy and the consequent requirement for large shipshed complexes led to a radical urban reorientation of the Piraeus, and the creation of a new naval arsenal which soon acquired enormous symbolic civic status.[28] Designed to accommodate the newly created state-owned trireme fleet and its attendant ship's gear, these naval dockyards were public buildings financed from the public purse as epigraphic and literary evidence attest.[29] The source consensus with respect to Themistocles' role in promoting the naval strategy and developing the Piraeus begins to fracture somewhat when the detail of its implementation is analysed. Thucydides claims that the Piraeus project was commenced by Themistocles when he was archon in 493/2 but only completed a couple of years after the Persian invasion in 478 when the fortification walls that surrounded the city were finally finished at the same time as those of Athens (Thuc. 1.93.2;3). On the other hand, both Diodorus

26 Noack 1907, 129.
27 Lawrence 1983, 303.
28 Baika 2013, 185.
29 *IG* 1^2 889.

(11.41.2) and Plutarch (*Them.* 19.2) put the commencement of the Piraeus construction project immediately following the expulsion of the Persians 'after this he proceeded to develop the Piraeus as a port, for years already taken note of the natural advantages of its harbours and it was his ambition to unite the whole city to the sea.' (Plut. *Them.* 19.2). Timing aside, Thucydides leaves us in no doubt that these were formidable constructions in which no expense was spared: 'between the walls thus formed there was neither rubble nor mortar, but great stones hewn square and fitted together, cramped to each other on the outside with iron and lead' (Thuc. 1.93.5). Considering that the fortification circuit walls of Athens were almost 6 km in length and those of Piraeus over double that at 13 km, they constituted a very large investment in both man-hours and material (Thuc. 2.13.7).

In topographical terms, as Strabo indicates (*Geog.* 1.3.18), the Piraeus peninsula was essentially a rocky island which by the 5th century was linked to the mainland by a narrow strip of land. As one of the 'least hospitable regions in all Attica'[30] the area would not have presented itself as an obvious location for the establishment of a new city. Its sole attraction was the strategic potential of its three natural harbours as the location for an expanding navy. Up to this point, the open beaches at Phaleron served as the principal port of Athens (Hdt. 6.116). Designed by Hippodamus of Miletus,[31] the urban plan of Piraeus was envisioned as a naval dockyard facility from its inception, with a separate commercial port and attendant city-space laid out in his trademark grid pattern. At the core of this novel experiment in urban planning were its three harbours. They all were equipped with shipsheds yet each had its own distinct function, with the principal distinctions being between the naval harbour at Zea, and the commercial harbour of Kantharus. Its symmetrically aligned network of streets combined with the naval dockyards formed an integrated city plan. This is evident from the fact that its four main broad avenues which intersect at the heart of the city are also the principal routes leading to its three harbour basins.[32]

The systematic division of the urban space of Piraeus into its constituent functional elements is also attested by the many boundary markers.[33] Based on an analysis of the inscriptions on some of these stone markers, it is evident that the building of the naval dockyards of the Piraeus preceded any

30 Garland 1987, 7.
31 Arist. *Pol.* 2.5.1267b22–1268a14. Aristotle states that Hippodamus 'invented the art of dividing up cities and laid out the Piraeus'.
32 Baika 2013, 196.
33 Gill 2006, 6.

commercial or urban buildings of the city which tends to corroborate the idea that Piraeus was conceived, from the outset, as the state naval headquarters of Athens.[34] Indeed, the archaeological evidence indicates that much of the remaining urban space of Piraeus does not seem to have been constructed until shortly after the mid-5th century.[35] By that stage, the Hippodamian-designed city of Piraeus had become the principal locus of all the naval operational activities of the democratic polis, complete with marshalling-stations and crew assembly points for the rapid mobilisation and launch of naval expeditions.[36] The archaeological evidence of the boundary markers gives considerable credence to the proposal of Demosthenes that naval crew mobilisations were to be arranged according to the 10 tribes and 30 trittys at specified groups of shipshed complexes at each of the three harbours (Dem. *On the Symmories* 14.22–23). Situated right beside the principal naval harbour of Zea, which in the 4th century had shipshed accommodation for almost 200 triremes, the Hippodamian agora would have provided sufficient open space to accommodate the mustering of thousands of trireme crew members during large-scale naval mobilisations.

The creation of the new city of Piraeus as the naval headquarters of Athens constituted an enormous undertaking in infrastructural terms. This substantial investment in architecturally complex on-shore naval facilities, and an equally substantial investment in a fleet of state-of-the-art warships, obliged Athens to commit concomitant resources to protecting its newly constructed maritime assets.[37] Providing for the defence of Piraeus was a security matter of the utmost importance.[38] As a customised naval agglomeration complete with newly constructed harbours, dockyards, storage areas, and an extensive complex of shipsheds to house its expensive fleet of triremes, the city itself was protected on all sides by fortified walls from the outset. The Athenians had learned their lesson from an earlier experience when during its war with Aegina the Aeginetans mounted a successful seaborne raid on what was then Athens' port, Phaleron, 'and thus inflicted great damage on the Athenians' (Hdt. 5.81). As a first line of defence, this perimeter defensive wall which surrounded the city was not considered to be sufficient on its own to protect its prized naval assets. Each of the naval harbours, or exclusive military zones within shared

34 Baika 2013, 187.
35 Gill, 2006, 15.
36 Jordan 1975, 101–102.
37 Lovén 2011, 1.
38 During the First Peloponnesian War the Athenians carried out just such a raid in 457 on Gythion in the Peloponnese, and 'burnt the arsenal of Sparta' (Thuc. 1.108.5).

FIGURE 7 Piraeus
ORIGINAL WATER COLOUR ILLUSTRATION BY MIEKE VANMECHELEN

harbour areas such as at Kantharus, was also secured by an additional fortification wall on the land side as a vital supplement to the city's overall fortifications. Thus the naval harbours, though an integral part of the urban space, were separated from the rest of the city by these inner fortification walls as an added security measure. On approach from the sea, at the mouth of each harbour, defensive towers were constructed on each side which could be closed off with chains in the event of a seaborne attack.[39] The combined effect of these additional interior fortifications was to create the ultimate in secure naval zones, a 'closed/enclosed harbour' (κλειστὸς λιμήν), of which Piraeus was the most notable example.

Direct military attacks were not the only dangers to which the naval dockyards and its fleet of triremes were susceptible. As large parts of the infrastructure, especially the shipsheds, the ships themselves, and much of their valuable gear were made of wood, the threat of fire posed a constant hazard. The Athenians were very much alive to this danger and took appropriate precautions. There is solid archaeological evidence that each shipshed had a solid back wall and that the shipsheds themselves were divided into smaller groups of 8 to

39 Baika 2013, 210–211.

10, each group separated by an additional solid wall which undoubtedly gave extra security and served as an additional fire-buffer.[40] Arson as a military tactic was also a concern, as is made clear from Demosthenes identifying a certain Antiphon, 'who came to Athens after promising Philip that he would set fire to the dockyards; and was caught while hiding in the Piraeus' (Dem. *De Corona* 18.132). Apart from the ships, large quantities of other valuable materials such as timber, paint, pitch, ropes and metal, especially bronze, were also stored in the dockyard precincts which made theft and vandalism perennial problems. Indeed, Strabo (14.2.5) is cited as a source for a law at Rhodes which prescribed the death penalty for anyone found trespassing in the naval arsenal.[41]

Access to and from each of the harbour areas would have been via gates in the interior fortified walls, which were undoubtedly guarded at all times. In 5th century Athens there was, according to Aristotle, a special body of 500 watchmen (φρουροὶ νεωρίων) selected by lot from the demes whose task was to provide round-the-clock surveillance of the dockyards in the Piraeus (Arist. *Ath. Pol.* 24.3; 62.1). Aristotle's round figure of 500 watchmen may at first appear to be unrealistically high, however, closer analysis suggests it may not be that far wide of the mark. First, there were three individual naval dockyards each separated from the other by some distance which, on a crude division, would allow 166 guards per site. Assuming a generous 2 × 12 hour shifts for seven days a week and no absenteeism, this would enable up to 12 guards to be present at each site at any one time. To monitor the comings and goings of hundreds, and at times thousands of men, per day in an area of many hectares (much of it roofed), this does not seem to be an excessively high figure. Furthermore, this admittedly crude calculation takes no account of the number of guards needed to patrol the 13 km perimeter walls of which 'only half of this, however, was guarded' (Thuc. 2.13.7). Given the strategic importance of these naval assets, their enormous replacement costs, and the ever-present risks of enemy attack, arson, theft, and accidental fire, it would seem that those charged with security at Piraeus are more likely to have over-invested rather than under-invested in relatively cheap man-hours (even slaves) as a form of low-cost insurance.

It was Cimon, the victor of the final battle of the Persian wars at Eurymedon (467), who led an Athenian expeditionary force to the Peloponnese to assist Sparta in quelling a helot uprising in 461. Though there at the explicit invitation of the Spartans, Cimon and his expeditionary force were summarily dismissed, an action which provoked consternation in Athens and led to Cimon's

40 Blackman, Rankov 2013, 256.
41 Blackman 1968, 82–83.

ostracism. Therefore, 'the first open quarrel between the Spartans and Athenians arose out of this expedition' (Thuc. 1.102.3), which led quickly to the First Peloponnesian War (461–446). This was largely a proxy war fought between the surrogates of Sparta and Athens. As a result of this conflict, Athens secured its western land frontiers by occupying Megara (Thuc. 1.103.4), and its vital Saronic Gulf sea routes by finally defeating and occupying its long-time maritime rival Aegina. But this war had a further and, in the long term, more significant outcome: it forced the Athenians to address the remaining gap in their strategic defence structures and so, 'about this time the Athenians began to build the long walls (τὰ μακρὰ τεῖχη) to the sea, the one towards Phaleron and the other towards Piraeus' (Thuc. 1.107.1).

4 The Long Walls

The decision to create a fortified naval port at Piraeus *de novo* was a radical and audacious initiative. Though undoubtedly an oversimplification for what must have been a complex process of policy formation, ancient source evidence attributes the final decision to Themistocles' ability to convince the demos to endorse his proposals. Consequently, Piraeus became a substantial urban centre which seamlessly integrated its residential and civic space with its primary function as the supreme naval headquarters of Athens. The Parthenon, Pnyx and Agora may have exemplified the cultural and political hegemony of Athens, but its new-found military cutting-edge was made manifest in the Piraeus. Yet, it was precisely this geographical dislocation between the political and administrative centre of the *asty* and its newly created naval headquarters at Piraeus that exposed a potentially fatal flaw at the heart of the new naval strategy. The 8-km distance between the inland city of Athens and its war fleet and naval arsenal based on the coast at Piraeus had the potential to fundamentally compromise, not only Athens' new offensive naval capacity, but the very ability of Athens itself to survive a siege. It would have been a logistical and military nightmare to have to defend, simultaneously, two urban areas 8 km apart. To function effectively in defence terms, the new maritime strategy required a further large investment in monumental infrastructure—the Long Walls (τὰ μακρὰ τεῖχη).

The Athenian Long Walls have been described as 'the most revolutionary development in the history of Greek strategy.'[42] Yet, despite their critical impor-

42 Hanson 2005, 26.

FIGURE 8 The Long Walls
ORIGINAL WATER COLOUR ILLUSTRATION BY MIEKE VANMECHELEN

tance for the achievement of Athenian naval supremacy, pro-Spartan opposition to the project continued in Athens, 'in the hope of putting an end to the democracy *and to the building of the long walls*' (Thuc. 1.107.5, emphasis added). Almost four years after construction began at the beginning of the First Peloponnesian War (461), the Long Walls were completed in 458. They created a triangle encompassing a massive swath of the coastal plain of southern Attica with Athens at its apex and Piraeus and Phaleron at its western and eastern base, respectively. Collectively, these two walls were referred to as the 'Long Walls' with the one to Phaleron called the Phaleric Wall (τὸ Φαληρικὸν τεῖχος) (Thuc. 2.13.7) and the other one, presumably, the Piraic (τὸ Πειραϊκὸν τεῖχος). The Long Walls, combined with the city ramparts of Athens and Piraeus, created a safe-zone within which the whole population could take refuge in times of crisis.

At a stroke the Walls virtually eliminated the risk of starvation in Athens caused by the usual crop-destroying tactics of invading land armies. It was the final piece in the strategic jigsaw that saw the physical integration of the *asty* with the harbours on which its military and economic survival depended. The Long Walls also helped alter the military calculus within Greece by further shifting the balance of power in favour of Athens and, in the process, exacerbating the growing tensions with Sparta and her allies. These were resolved, at least

FIGURE 9 The Long Walls connecting Athens with Piraeus
ORIGINAL WATER COLOUR ILLUSTRATION BY MIEKE VANMECHELEN

temporally, by the Thirty Year's Peace (446/5) which created a stable balance of power between the mismatched forces of a Spartan land army and an Athenian sea power by recognising Spartan hegemony in continental Greece and Athenian naval hegemony in the wider Aegean. But 446 proved a turbulent year for Athens, suffering defeat both on land and at sea, she lost control of her buffer zone in central Greece and so was once again exposed to an assault by land.[43] Athens, now led by Pericles, responded decisively to the emerging danger and brought Themistocles' maritime strategy to its logical conclusion by completing the final large-scale infrastructural component inherent in that vision—the Southern Long Wall (τὸ νότιον τεῖχος).[44]

Themistocles had always said that if push came to shove, the Athenians should forsake the city completely and relocate to Piraeus (Thuc. 1.93.7), just as they had decamped to Salamis, Troezen and Aegina in the face of the Persian onslaught in 480. The new Piraic Long Wall built parallel to and just 200 metres apart from the existing Northern Long Wall was the nearest Athens came to giving practical effect to that advice, not by facilitating the abandonment of the *asty*, but by creating an impregnable fortified corridor between the two urban centres. This new narrow security zone did signal an abandonment—the

43 Hornblower 2002, 36–37.
44 Conwell 2008, 30–36.

unprecedented abandonment of its *chora* by Athens. With an expanding urban population largely dependent on imported food for its survival[45] Athens had, in strategic terms, turned its back on its agricultural hinterland. At the same time as new shipsheds were built following the conclusion of the First Peloponnesian War (Andoc. *De Pace* 3.7), the Hippodamian new Piraeus plan was implemented (Arist. *Pol.* 2.5.1267b22), which transformed the naval and commercial facilities of the port. The new Emporium provides further evidence of Athens' growing dependency on imported corn.[46]

All of which presaged a transformation in the structure of the Athenian economy, a fact proudly proclaimed by Pericles in the Funeral Speech: 'the greatness of our city draws the products of the whole world into our harbour and we enjoy them just as naturally as we do our own' (Thuc. 2.38.2). Yet the Long Walls were a necessary but not sufficient condition to underwrite both Athenian security and her hegemonic ambitions. Without the trireme war-fleet the Long Walls were of little strategic value as demonstrated by the speedy capitulation of Athens following the destruction of its navy at Aegospotami (404). Deprived of a means to raise the Spartan blockade of Piraeus, Athens faced starvation and had to surrender. It was this commitment of unprecedented resources to creating, maintaining, and provisioning this enormous navy that had a transformative impact of the structure of the political economy of Athens.

5 Estimating the Costs

Building large-scale defensive infrastructure under the direct pressure of invasion necessitated the mobilisation of large-scale labour forces as our sources confirm: 'All the Argive people, men, women, and slaves set to work upon the walls, and from Athens there came to them carpenters and stone masons'. (Thuc. 5.82.6). In 393 Conon, in return for being allowed by the Persians to keep his fleet of 80 triremes, offered to re-build the Long Walls and the Piraeus fortification walls destroyed by the Spartans after the defeat of 404. Conon persuaded Pharnabazos to fund the re-building of the Attic defensive walls because 'nothing would be more grievous to the Spartans than this … for you will have brought to nought what they had created with the greatest of effort.' (Xen. *Hell.* 4.8.9). Diodorus takes up the story: 'Accordingly Conon hired a multitude of

45 Garnsey 1988, 105–106; 123; 127.

46 Garland 1987, 27.

skilled craftsmen, and giving the bulk of his rowers as labourers,[47] he speedily rebuilt the larger part of the wall. For the Thebans too sent five hundred skilled artisans and stonemasons, and some other cities also gave assistance.' (Diod. 14.85.3).

Though financing these enormous infrastructural projects was extremely burdensome, we have no figures for the costs of a total circuit wall.[48] Some indication of such costs can be gleaned from a fortification wall constructed by Dionysius of Syracuse between 405 and 396. As related by Diodorus, with more than a hint of exaggeration in the figures, a labour force of 60,000 peasants and six thousand yoke of oxen were mustered so that 'the wall was brought to completion in 20 days. It was 30 stades in length and of corresponding height … there were lofty towers at frequent intervals and it was constructed of stones four feet long and carefully joined.' (Diod. 14.18). These numbers, of course, have a suspiciously sexagesimal element to them which means they should be taken as indicative rather than an accurate bill of costs. On the basis of Diodorus' figures, Camp estimates that this fortification wall would have cost in the region of 300 talents or 1,800,000 wage days (i.e. 200 t. building labour and 100 t. transport) which confirm, 'that fortifications represent by far the greatest physical expression of public, communal participation, whether we think in terms of money, labor, or organization.'[49] Without taking his calculations based on Diodorus' numbers as a reflection of the actual costs, there is little doubt that Camp's conclusions regarding the significance of such infrastructural investments are likely to be, so to speak, on the money.

The reservations with respect to the veracity of his numbers notwithstanding, as an exercise, if we take Diodorus' description of this 6 km circuit wall with towers built of large stone blocks at an approximate cost of 300 talents, and apply it to the fortification infrastructure of Attica we get the following:

Athens Circuit Walls	6 km	300T
Piraeus Circuit Walls	13 km	650T
Long Walls (both)	12 km	600T
Phaleric Wall	6 km	300T
		1,850T
Shipsheds		250T
Total Naval Infrastructure		2,100T

47 Conon had arrived with 80 triremes so if we define 'the bulk' as 70 % then 70 % of 13,600 rowers would have meant making 9,520 labourers available for wall-building.

48 Camp 2000, 46.

49 Camp 2000, 47.

These figures are only very rough estimates of the cost of the largest known naval infrastructure costs, but they indicate the potentially enormous levels of expenditure involved. The more important point is, however, that by their very nature these projects were very labour intensive and so would have provided steady paid employment for significant numbers of labourers and craftsmen over many years. In economic terms, this size of public works programmes in a small economy the size of Athens would have had tremendous multiplier effects in boosting demand and, ultimately, economic development. These considerations and their implications for economic growth will be discussed further in Chapter 12.

CHAPTER 10

Soldiers, Sailors, Citizens

As a behavioural expression of what many would argue is our species' inherently violent nature, war has not been considered part of the remit of the behavioural science of economics. Just one year into the First World War, F.W. Hirst, complained that no serious economist up to then 'has made any comprehensive inquiry into the economics of modern warfare.'[1] However, the devastating consequences of that conflagration, and especially its flawed political settlement, was the subject of a detailed analysis by one of the foremost economists of the 20th century, J.M. Keynes.[2] But this was to be the exception that proved the rule. Throughout what has become known as the 'Military Revolution'[3] debate of the last few decades, economists and economic historians, whom one might have expected to have had a keen interest in the enormous expenditures involved in warfare, have remained aloof from the debate, by and large. This is surprising considering that war in early modern Europe was the single largest item of state expenditure, with many states routinely spending 70–80 percent of their income on armies and navies. In times of actual war, expenditure often exceeded revenue by a significant margin, resulting in a need to resort to deficit financing on an unprecedented scale.[4] One of the few occasions when Athens was forced to indulge in deficit-financing was during the critical period of the Archidamian War when the human and economic costs of the plague, combined with extraordinary levels of military expenditure, forced the Hellenotamiai to borrow from the sacred Treasury of Athena. It was the start of a practice which continued every year for the next ten years due to the magnitude of the ongoing expenditure on the war effort.[5]

1 Hirst 1915,10.
2 Keynes 1919.
3 Black 2014, 73. The proponents of the Military Revolution hypothesis argued that changes in armaments gave rise to new strategies and tactics which in turn necessitated the creation of an extensive administrative and financial system to support the first standing armies. Initially proposed by Michael Roberts, who argued that military innovations between 1560 and 1660 made the creation of the state, not only possible, but necessary.
4 Voigtländer 2013, 177.
5 Kallet-Marx 1993, 134–136; Loomis 1998, 243. The severity of the financial crisis caused by escalating military expenditure is exemplified by Athens' imposition of a special war tax (εἰσπορά) of 200T for the first time in 428 (Thuc. 3.19).

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The discourse of the Military Revolution began 60 years ago with the inaugural address by Michael Roberts at Queens University, Belfast. Entitled 'The Military Revolution 1560–1660', it examined the social and political consequences for European society that resulted from changes in military technology, tactics and organisation. This hypothesis had an enduring influence of European historical scholarship. Virtually all subsequent published works on early modern Europe which dealt with matters of war or defence included references to, or a synopsis of, Roberts' hypothesis.[6] He postulated a range of unique occurrences in the art of warfare in post-Renaissance Europe involving tactical and strategic innovations which had far-reaching logistical consequences, leading ultimately to the creation of the first early modern European standing armies. To be effective, the new tactics required vastly increased numbers of troops which in turn had two principal effects on society: extensive funding requirements (taxation and levies), and increased devastation.[7]

While some doubts have been expressed about Roberts's claims regarding the uniqueness of these tactical and strategic innovations, there is no gainsaying his claim that the size of armies had grown inordinately: there was a tenfold increase in the total number of troops engaged in European battles between 1530 and 1710 AD.[8] Others have expanded the range of the debate considerably, positing a direct causal relationship between the ongoing requirements to fund an expanded military machine and the rise to the modern nation-state.[9] An extension of this perspective has argued that it was these extensive and growing military commitments that not only shaped the structures of the early modern state, but were decisive in shaping its economy, contributing to 'the rise of the West' and its global dominance from the 19th century onwards. One of the principal achievements of the 'Military Revolution' discourse has been to extend the discussion of the consequences of security and defence strategies beyond the narrow confines of military history.

Warfare played a defining role in ancient Greece. The Greeks would have had little disagreement with Clausewitz's aphorism that, 'War is a mere continuation of policy by other means'.[10] They considered everything to do with the polis to be fundamentally political, and consequently, they considered that the manner through which war was prosecuted could have significant conse-

6 Parker 1996, 2.
7 Parker 1976, 196–197.
8 Parker 1976, 206.
9 Tilly 1990.
10 Clausewitz von 1997 [1832], 22.

quences for the political sphere.[11] The anthropologist, Ernest Gellner, goes so far as to say that political violence was 'the central organising principle of society' in ancient Greece.[12]

How warfare shaped the political, cultural, social and economic aspects of Greek society has held an abiding interest for ancient history scholars. Since the mid-19th century there has been an intense debate, referred to principally as the 'hoplite debate', on how military commitments helped shape the contours of polis political institutions and largely determined access to political power within Greek city-states.[13] A consistent theme in this scholarship has been the proposition that there are clear linkages between institutional developments in the military sphere and the political and social institutional structures of Greek society. Indeed, a significant trope of modern scholarship has insisted that the transition to democracy in Athens is directly attributable to the dominance of the ideology of hoplite agrarianism.[14] Specifically, the debate charts the rise of a class of 'middling' farmers to political and ideological supremacy because of their role as hoplite infantrymen in the phalanx. While the details of the controversy need not detain us unduly here, of more immediate interest is an adjunctive debate that posits the advent of a radical democracy at Athens with the acquisition of political power by the lowest social class, the thetes,[15] because they were the rowers who powered the Athenian navy.

1 Hoplite Ideology and Its Persistence

For much of the archaic period, warfare was largely an aristocratic endeavour in which heroic contests between leading members of the elite (πρόμαχοι) held centre-stage. It was the age of heroes, and Homer was its indubitable chronicler. According to the standard hoplite narrative, around 700 BC during the so-called Dark Age in Greece, there was a radical change in the way war was fought. The introduction of new arms and armour inaugurated an era of unprecedented

11 Hansen 1991, 36–37, 115–116.

12 Gellner 1992, 62.

13 Grote 1846, *History of Greece*, was the first major articulation of what was later referred to as the orthodox hoplite narrative, but its most prolific modern exponent is V.D. Hanson 1989; 1995.

14 Hanson 2005, 289–312; Murray 1993, 142. Hanson is one of the foremost and consistent proponents of these connections.

15 Apart from being the fourth of Solon's census categories, thetes also means 'wage-labourer', which is the meaning often employed by classical writers such as Aristotle. For discussion see de Ste. Croix 1981, 182–185.

innovations in battle tactics in which the collective of hoplite infantrymen, the phalanx, replaced the individual aristocratic heroes of the Homeric age.[16] These radical changes on the battlefield were reflected within the emerging political structures of the polis and were 'illustrative of ongoing changes in the economy of the Greek world.'[17] The genesis of these military, social and political transformations was an expansionary phase of Greek economic growth from which a new agrarian 'middle class' (οἱ μέσοι) emerged to become a political force to be reckoned with. The monopoly of political power by the aristocratic elite was undermined as the new hoplite defenders of the community acquired political rights: a new phenomenon emerged—the citizen yeoman infantryman. Individual glory-seeking in battle was replaced by a collective sense of citizen solidarity in which 'the middle-class would start to claim its share of power in the state, breaking into the monopoly held by the aristocrats'.[18] At times of war, according to Cartledge, 'practically every available free adult male, citizen or non-citizen, bore arms—or at any rate fought in some capacity' concluding that 'politically, therefore, it mattered very much where the specific gravity of Athens' principal military fighting force was centred.'[19]

Providing a taxonomic framework for the hoplite debate, Solon's early 6th century census classes divided the Athenian citizen body hierarchically into four socio-economic categories according to their productive capacity, *pentakosiomedimni, hippeis*, *zeugitai* and *thetes* (Plut. *Sol.* 18.1–3).[20] Permeating much of modern scholarship is an inextricable link between an individual's economic worth, expressed in terms of the Solonic classification, and access to differential levels of political participation with their concomitant obligations of particular forms of military service.[21] As expressed by Viggiano, Solon's census groups 'not only broke the political monopoly of the aristocrats ... but also essentially divided political power according to military function.'[22] While Herodotus famously claimed that the advent of democracy was a direct contributor to Athenian military success (Hdt. 5.78), Aristotle repeatedly stresses causal flows in the opposite direction, the connection between hoplite military

16 Hanson 1995, 228, believes that the hoplite panoply was not necessary for the development of the phalanx formation and that the phalanx pre-dated hoplite technology.

17 Hanson 1995, 235.

18 Andrewes 1956, 34.

19 Cartledge 1998, 61.

20 Hansen 1991, 116; See also Ober 1991, 119–210; Rosivach 2002.

21 Böckh 1817, 34–35. The association in scholarship of Solon's economic classes and military service has a long tradition going back to Böckh, Die Staatshaushaltung der Athener, vol. 2, Berlin 1817.

22 Viggiano 2013,125.

service and their political leverage: 'In some states the citizen-body consists not only of those who are serving as heavy-armed soldiers, but also of those who have so served' (Arist. *Pol.*1279b14–15). More specifically, he emphasised the political dues owed to the hoplite infantryman: 'it is proper that the citizenship should only consist of those who possess heavy armour' (Arist. 1297b1–2); and again, 'as the states grew and the wearers of heavy armour had become stronger, many more came to have a part in the government.' (Arist. *Pol.* 1297b22–23). In the case of oligarchies, he suggests, it can even lead to regime change, because when 'they give a share in the constitution to the multitude, the oligarchy falls because they are compelled to make use of the common people' (Arist. *Pol.* 1306a24–25).

However, the relationship between military participation and political power never constituted a simple one to one correspondence. As a result, the principal contentions of the hoplite orthodoxy have not gone unchallenged. For instance, van Wees believes there is an anomaly at the heart of the presumed link between hoplite military service and their acquisition of political power. He argues that thetes were an integral and major component of Athens' hoplite military forces[23] and yet they did not acquire the political privileges which their 'middle-class' compatriots are deemed to have received for the same hoplite military service. As a consequence, he draws the important conclusion that 'wealth, not military service, was the primary criterion for a share in political rights'.[24] Despite its ubiquity in modern scholarship, as Gabrielsen has pointed out, the only ancient source that specifically links the Solonic classes with military service is Thucydides 6.43.1 and modern scholarship's focus on this aspect, he suggests, has been 'guided by theoretical preoccupations'.[25] Similarly, Rosivach argues that the use of the term thetes in this context by Thucydides should be understood in its socio-economic rather than its political context because the thetes served in the navy for material gain not because they were under any obligation to do so. These volunteers were 'poorer men drawn from the thetic labor pool who, attracted by pay and the potential for booty, volunteered to serve as hoplite marines even though they were not required to do so.' He continues by pointing out that 'it is (sic) should be noted that no ancient text specifically links the Solonic thetes with serving in the navy'.[26]

23 *Contra* de Ste. Croix 2004,13, 21; van Wees 2002, 67–69, distinguishes between the wealthy classes who were obliged to serve in return for political entitlements, and the thetes who had no such obligations but who could volunteer.

24 van Wees 2001, 57.

25 Gabrielsen 2002, 83,87.

26 Rosivach 2012, 136.

Though land warfare was by far the predominant form of military engagement throughout the archaic period, as discussed earlier, Athens had notable involvement in overseas naval activities in the 6th century and especially during its second half.[27] As a consequence of this prior pre-eminence, the ideological privileging of the status of the hoplite warrior was an ingrained feature of the cultural landscape of Athens before the emergence of a fully-fledged Athenian thalassocracy in the early 5th century—the Homeric epic, the Iliad, being its most eloquent expression. Given the preponderance of land warfare in the 6th century when these institutional arrangements were being established, the emergence of the ideologically sanctioned figure of the heavily armed hoplite infantryman is unsurprising. The embodiment of Greek amateur courage, this yeoman citizen-soldier who supplied his own weapons and armour became a pervasive iconic image in Greek visual and literary sources, and provided the conceptual and evaluative framework within which the classical Athenians understood their world.

The reason for this cultural acclamation, according to Hanson, was simply that, 'only the free landowning citizen—the hoplite—was willing and able to endure the spear carnage of phalanx warfare, and thus alone deserving of the honours and prestige of his polis at large.'[28] This hoplite ideological ascendancy within Athens is strikingly confirmed by the preponderance of infantryman iconography in paintings, vases and statues and the lauding of hoplite bravery in literary works during the late 5th and 4th centuries when, arguably, sailors were militarily far more important.[29] In contrast with hoplites, there are few visual representations of sailors and ships and even fewer of triremes, an absence explained by modern scholarship as deriving from elite disdain for the 'naval mob' (ὁ ναυτικὸς ὄχλος) such that the ruling elite 'could not bring themselves to look at pictures of ships or rowers—those symbols of power of the masses.'[30]

The significance of the presentations of the battles of Salamis and Marathon within this ideological contestation is also revealing. Plato acknowledged the importance of navies and their crews for the security of states: 'they owe their safety to the arts of the pilot, the captain and the rower—men of all kinds and not too respectable.' (Plato. *Laws* 707b). However, he disagreed with the common view among the Greeks that it was Salamis that saved Greece, arguing instead 'that it was the land-battle of Marathon which began the salvation of

27 Gabrielsen 2002, 91.
28 Hanson 1989, xxiv–xxv.
29 Hanson 2005, 306.
30 Strauss 2000a, 267.

Greece, and that of Plataea which completed it.' (Plato. *Laws* 707c). Produced in 472, Aeschylus' *Persians* is the earliest extant source reference we have the battle of Salamis. In response to Queen Atossa's enquiries about the Athenians, she is told of the importance of the hoplite army and the role of silver but no reference is made to the significance of the Athenian navy.[31] So, in a society which had such a fundamental dependence on an unprecedentedly large navy for its security and economic prosperity, how do we explain the enormous disparity in the ideological perception between hoplite and naval military service?

Athenian elite ideology frowned upon all forms of banausic pursuits considering manual labour as an essentially demeaning activity which was potentially detrimental to a citizen's higher duty of political engagement with the polis.[32] Xenophon articulates what were surely widely held elite views in this regard: 'The so-called banausic occupations are always being disparaged … Such banausic occupations also mean that people have no time for attending to their friends or the state, so that those who follow them are reputed to be bad at dealing with friends and bad defenders of their country' (Xen. *Economics*, 4.2–3). Similar views were expressed by Aristotle: 'The term banausos should properly be applied to any occupation, art, of instruction which is calculated to make the body, or soul, or mind of a freeman unfit for the pursuit and practice of goodness. We may accordingly apply the word banausos to any art or craft which adversely affects men's physical fitness, and to any employment which is pursued for the sake of gain; these preoccupy and debase the mind' (Arist. *Pol.* 1337b8–22). In this context, it must also be remembered that the association of pay with naval service seems to have been accepted from an early stage in the reconstituted Themistoclean navy of the early 5th century. According to Aristotle, for example, at the time of the battle of Salamis in 480, following a failure of nerve on the part of the *strategoi*, the Areopagos regained its political credibility in Athens by funding the naval resistance to the Persians by giving those who manned the fleet 'eight drachmas a head' (Arist. *Ath. Pol.* T. 23).[33] As a professional occupation in which skill, technique and, above all, hands-on experience were essential elements, it is unsurprising that those who earned their living as either full or part-time sailors were sometimes referred to disparagingly in our elite literary sources as 'the naval mob'.[34]

31 Aeschylus, *Persians*, 234–240.
32 See Austin and Vidal-Naquet, 1977,11–12.
33 See also van Wees 2001,83.
34 Cohen 2002, 100 emphasises that both manual labour and working for another person are disparaged.

Thucydides emphasises the importance of experience in naval warfare when he has the Corinthian ambassador accept Athens' superiority in this regard (Thuc. 1.21), while a little later he has Pericles argue that the Peloponnesians would have difficulty acquiring such naval skills quickly (Thuc. 1.142). The importance of naval experience is again highlighted by Thucydides in Phormio's address to his dispirited trireme crews as they were about to confront a superior Peloponnesian fleet comprising, a 'multitude of ships.' Despite being outnumbered Phormio was confident that the Athenians would prevail because of their vaunted naval skills: 'we are each of us more confident, according to our experience in our particular department.' (Thuc. 2.89.3).[35] Drawing on this, Rawlings argues that the relative skill of the conflicting fleets was of primary importance in deciding the outcome of sea battles.[36] As Herodotus confirms, a crucial aspect of the overall tactical effectiveness of the trireme was the skill of the individual steersman (Hdt. 8.12). Likewise, Diodorus suggests that it was the quality of the skills of the steersman and rowers of a numerically disadvantaged fleet which enabled them to defeat the larger opposing side at the battle of Cynossema in 411 (Diodorus 13.39–40). Above all, high-level naval skills gained through practice and experience were critical to the successful execution of trireme tactics such as ramming and shearing of enemy oar-banks (Diodorus 13.78.1; Polybius 16.4.16).

War at sea was thus seen as fundamentally a matter of know-how (ἐπιστήμη), skill (τέχνη) and experience (ἐμπειρία). In contrast, land war was associated more with hoplite manly courage: professional competence versus amateur bravery, with the latter having an innate appeal for elite ideology steeped in the glory of heroic combat (Thuc. 7.70.3; 2.89.2). It is an appeal that some modern scholarship has found inordinately beguiling as well: 'at the root of infantry battle in classical Greece lay the value of personal courage'.[37] But the most comprehensive articulation of the standard hoplite orthodoxy is contained in V.D. Hanson's *The Other Greeks: The Family Farm and the Agrarian Roots of Western Civilisation* and *The Western Way of War*. In these monographs, Hanson explores the less travelled dimension of Athenian political economy and, in the process, elevates his percussive message linking the triad of hoplite warfare, agrarianism and democracy to one that proffers an over-arching ideological foundation for the 'Western Way of War'. For critics of this hypothesis, the 'Western Way of War' is understood 'not so much as an objective reality, a

35 This episode is discussed again in the context of the 'Trireme School of Democracy' later in this chapter.

36 Rawlings 2007, 122.

37 Kagan 2009, Preface xi.

genuine continuity of practices, but more as a strong ideology which since its creation by the Greeks has been, and still is, frequently reinvented, and changed with each reinvention.'[38]

Ideologically symbolic systems tend to be driven by internal dynamics which give them an independent or, at least, a semi-autonomous existence.[39] Predominant ideological systems such as that of the Athenian hoplite also tend to have a lengthy half-life which ensures that their influence persists long after the circumstances that gave rise to them have dissipated or even disappeared entirely. Their transformation into idealised versions of reality aids this longevity. During the classical period, hoplite ideological pre-eminence became inversely proportional to their numerical position as the number of hoplites as a proportion of the total resident population of Attica 'probably constituted no more than a seventh to a tenth (i.e. about 20,000 hoplites)'.[40] Additionally, with naval operations becoming the cutting edge of imperial hegemonic control of the Aegean, the military role of the hoplites was increasingly relegated to service as marines on board triremes, as amphibious troops, as seaborne raiders, and as supporters of sieges (Thuc. 1.98.2–4,1.100–101,105.1–2,115–117,2.23.2,3.17.4; Plut. *Per*. 23.4). Yet, the sponsors of the oligarchic coup which overthrew the democracy in 411 were able to draw on the core aspect of hoplite ideology in order to restrict access to political power to 'those such as were most able to serve the polis in person and purse' (Thuc. 8.65 3).

Though far from obsolete, the classic hoplite battles between two heavily armed phalanxes had been superseded. In Athenian military calculations from the 5th century onwards, as naval engagements proliferated, the hoplite infantryman played a subordinate role to that of the thetes sailor. While, Hanson accepts that hoplite battles as conventionally understood were no longer in vogue, he still argues, on a glass-half-full basis, that far from this being a diminution of hoplite relevance the new naval strategy presented additional opportunities which led to 'the expansion of the Athenian hoplite horizon to include new responsibilities as marines and as seaborne hybridized troops.' Yet, despite these new hoplite 'opportunities', the preponderant role of the thetes within the naval strategy is put in stark relief by the casualty figures during the Peloponnesian War which are estimated by Strauss to have been 12,591 for thetes, over twice as much as those of hoplites (5,470): although 'the numbers of hoplites and thetes were roughly equivalent in 431.'[41] Despite the fact that

38 Sidebottom, 2004, x (Preface).
39 Geertz (ed.) 1973, 214–216.
40 Hanson 1996, 293.
41 Strauss 1986, 5,179–182.

'the precious equation between small landowner and heavy soldier was being lost', it was a new naval military paradigm in which hoplite farmers shared cramped trireme transport conditions with, and fought beside 'their social inferiors, blurring traditional consensus rubrics and cementing the notion—as the shared experience of danger offered by military service so often does—of political equality.'[42]

2 Schools of Democracy

As both our sources and modern scholarship claim that hoplite democratic participatory rights derived directly from their military service, on a similar basis, both Aristotle and the Old Oligarch link the political power of the thetes with their service as trireme rowers in the vastly expanded 5th century Athenian navy. Aristotle, for example, claims that while the hoplite victory at Marathon strengthened the Areopagos (Arist. *Pol.* 1304a20), it was the naval victory at Salamis that 'secured for Athens an empire which depended on naval power; and the effect of this was to make democracy stronger.' (Arist. *Pol.* 1306a24–25). While the Old Oligarch concedes that there was an element of normative justification in this process: 'it seems appropriate that in Athens the poor and the common people should have more power than the noble and the rich, because it is the common people who provide the rowers for the fleet and on which the power of the city is based.' (Ps.-Xen, *Ath. Pol.* 1.2). A further qualification to this source insistence on a causal relationship between sea power and democratic institutions is offered by Connor who distinguishes between institutional emergence and institutional persistence; 'none of the contemporaries seems to have connected the *origin* of democracy with Athenian sea power, they certainly used that connection to explain the strength and persistence of democracy and the role played in it by the lower classes.'[43] In an important contribution to this debate, Ceccarelli, argues that Thucydides was not a proponent of a formative link between the navy and democracy when she emphasises that 'Thucydide, tout en établissant clairement une relation de nécessite entre flotte, murs et trésor qui, rassembles, permettent la puissance, ne met pas en relation thalassocratie et démocratie.'[44]

Based largely on the views of Aristotle and Xenophon, many modern commentators have made explicit links between the role of thetes in the navy

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42 Hanson 1996, 299.
43 Connor 1990, 35–36.
44 Ceccarelli 1993, 445.

and democracy in Athens, and go further by claiming a causal relationship between the expansion of the navy and the emergence of a more socially inclusive form of democracy. Hansen states that 'Athens was a radical democracy ruled by the *ekklesia* in which the majority was constituted by thetes who lived within the city walls and were called up to row the ships whenever a squadron was launched'.[45] Barry Strauss, an acknowledged modern specialist in classical naval history, claims similarly that 'the navy was the backbone of Athens' military power … it allowed the poor men who rowed its warships to leverage political power.'[46] Even Amit, who in a tersely cogent comment suggests that 'sea-power alone does not explain democracy', believes that Athens was an exception to this rule.[47] Indeed an uncritical acceptance of the views expressed, in particular, by the Old Oligarch may well be behind much of the modern presumption of a causal relationship between service in the navy and political power at Athens. The clearest exponent of this causal relationship and the reasons for it is Strauss: 'Service in the fleet, I shall argue, ignited the thetes' political consciousness by offering them a practical education.'[48]

Just as the 'Hoplite School of Democracy' is premised on the fact that hoplites were essential to the defence of the polis and so had to be accommodated within its political structures, the 'Trireme School of Democracy' contends that, once the navy became the preeminent component of Athenian military capabilities, trireme rowers had to be given similar political access. The posited collective psychological and ideological cohesiveness that emerged among hoplites through their participation in the phalanx, was mirrored by a similar sense of class solidarity that developed among Athenian thetes due to their collective rowing experience on triremes. Stemming directly from this, the thetes gained a unity of purpose and confidence to demand enhanced political reforms resulting in Athens becoming a radical democracy. Just as previously the hoplite in battle became the citizen in the Assembly, the advent of the navy gave rise to the political assertiveness of citizen-thetes, so this widely held hypothesis goes. It is a hypothesis which prompted van Wees to observe that 'the political implications of the rise of the fleet are often noted (though rarely explored in depth).'[49]

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45 Hansen 1987, 11.

46 Strauss 2004a, 3–4; this book is a gripping account, expertly told, which created an awareness of early 5th century Athenian naval achievements far beyond the confines of academia.

47 Amit 1965, 60.

48 Strauss, 1996. 313.

49 van Wees 2003, 155.

It must also be considered that, spurred by its naval expansion, Athens experienced unprecedented economic development which was accompanied by a transformation in its social structure.[50] Aristotle says that the Athenians followed Aristeides advice when he suggested that they, take control of the League, abandon agriculture and take up employment in the newly expanding public sector. Specifically, he says Aristeides advised the Athenians to leave their farms and go and live in the city where they would all 'earn a living, serving in the military, standing guard and conducting public services' (*Ath. Pol.* 24.1–3). The expansion of the demand-led political economy of classical Athens also engendered a voracious appetite for foreign labour. From around the Mediterranean it attracted intellectuals, artisans, craftsmen, skilled and unskilled labourers from a disparate variety of social groups which included, slaves, metics and foreign mercenaries—'an entire shadow city of outsiders who had no formal political rights in the polis.'[51] Of these, through a combination of tribute and taxes, Aristotle claims 20,000 men were able to earn a living through paid state employment (*Ath. Pol.* 24.3).[52]

The expansionist economic policy behind these developments found its most ardent exponent in Pericles who declared that Athens 'should apply the surplus to public works … In this way, all kinds of enterprises and demands will be created which will … find employment for every hand, and transform the whole people into wage-earners' (Plut. *Per.* 12). Though the scale of the migration was very substantial there was a degree of social assimilation: 'so far as clothing and general appearance are concerned, the common people here are no better than the slaves and metics.' (Ps. Xen. *Ath. Pol.* 1.10).[53] As modern experience illustrates, when societies experience considerable population influxes the instinctive reflex of the resident population is sometimes to cleave more

50 Osborne 2004, 23 n. 1–.11–12. Referring to the Old Oligarch's comment in this regard (Ps.-Xen, *Ath. Pol.* 1.11–12) Osborne comments; 'This is a particularly interesting passage in as far as it draws attention to the way in which the need to pay the fleet had an impact on the whole structure of Athenian society.'

51 Hanson 1996, 293.

52 Rosivach 2011, 176, who argues that there is a chronological problem with Aristotle's attribution of this to Aristeides and that the expansion of state pay and the shift to the city occurred, respectively, before and after the Peloponnesian War and was associated with Pericles. It is also what Aristotle himself says later: 'the war against the Peloponnesians broke out, during which the people being locked up in the city, and becoming accustomed to earning pay on their military campaigns, came … to the decision to administer the government themselves' (Arist. *Ath. Pol.* 27.2).

53 Osborne 2004, 22. In a footnote, Osborne's interpretation of the Old Oligarch's meaning is '*Athens allows slaves and metics great freedom because its economy depends on them.*' (Italics in original).

fervently to an idealised version of the past in an attempt to come to terms with large-scale unsettling social change. For the 5th century Athenian elite, experiencing the disquieting consequences of unprecedented economic and social transformation, the ideological appeal of the concept of the autochthonous yeoman hoplite would have provided a compelling alternative to the reality of a multicultural cosmopolitan naval economy. Such ideological dissonance with reality is not uncommon. In the case of Athens, for example, the ideological allure of unalloyed self-sufficiency was in stark contrast with the practical necessity for large-scale annual importations of grain.[54] Similarly, as we have seen, though salaried employment and trade for profit were at odds with elite ideational notions, they were the essential means of livelihood for many, if not most, Athenians for much of our period.

From an economic point of view, one of the most significant aspects of the Athenian labour market is the number employed on a, more or less, full-time basis within the maritime sector—professional maritime employees.[55] Despite its economic significance our sources make no direct reference to such a category. Though Ps. Xen suggests that there was cross-over between the crews of commercial vessels and triremes, a proposition which has the merit of logic, and lends credence to the notion of the existence of a full-time cohort of professional seamen at Athens (Old Oligarch. 1.20). Aristotle also provides some tantalising evidence for the existence and indeed importance of employment in the maritime sector. In his breakdown of employment by sector for the general population, Aristotle identifies four principal categories: agriculture, arts and crafts, trade and commerce, and a fourth category which he terms 'the maritime sort' (Arist. *Pol.* 1291b18–20). This last category is the only one on which he further elaborates by identifying the main sub-categories whose functions he gives as being 'partly for naval war and partly mercantile, partly employed on ferries, and partly engaged in fisheries.' (Arist. *Pol.* N1291b21–22). He continues in this vein by identifying particular geographical locations which are closely associated with maritime employment in one or other of the various subcategories: 'We may note that there are many places where one of these subdivisions forms a considerable body; as fishermen do at Tarentum and Byzantium, *the trireme crews at Athens*, the merchant seamen in Aegina and Cos, and the ferrymen at Tenedos.' (Arist. *Pol.* N1291b22–25, emphasis added). Pericles makes an even bolder statement in this regard which, despite its undoubted rhetorical

54 Keen 2000, also see Garlan 1988, 131–133, 150–164.

55 For this part of the discussion the focus is solely on mariners or seamen, those working at sea in a variety of capacities.

context, must have had a considerable degree of veracity: 'Again, you [Athenians] are far superior to other men in experience of nautical affairs, for most of you get your livelihood from the sea; hence, while attending to your own private concerns, you are also at the same time gaining experience for encounters by sea.' (Thuc. 1.42–43).

While anything approaching precise figures for the total number employed in the Athenian maritime sector elude us, the following speculative breakdown at least provides an indication of the sector's economic significance. It must also be reiterated that most of the Athenian maritime sector was fully monetised as each employee received a daily wage.[56] Assuming the regular peacetime deployment of 20 triremes per month with an average crew of 150, would mean a naval employment at sea of 3,000. Add 500 for employment in the combined merchant fleet, fishing fleet and ferries and add a further 1,000 employed in on-shore facilities relating to security, maintenance and various allied crafts and trades to yield a total of 4,500 full-time (9 months) personnel for an average 25 days per month at 1 drachma per day, giving an annual wage bill of 168.75t.[57] These are levels of expenditure would have had significant effects at the macroeconomic level and they accord well with the insistence in our sources of the close affinity between financial resources and effective naval power. In economic terms, the consequences of such annual expenditures went deeper. As sailors invariably received their wages in coin, the intensification of naval warfare during the latter part of the 5th century was instrumental in further monetising, not only the Athenian economy, but that of the wider Aegean.[58]

The naval demand for labour though significant was also variable. The demand for trireme crews at times of large feet mobilisations clearly went far beyond what was immediately available in Piraeus, Athens and even Attica, frequently necessitating the employment of considerable numbers of foreign mercenaries.[59] Outside of periods of intense naval warfare, the 'peace time'

56 The importance of paid naval employment in both the short and long term is noted by Thucydides in his description of the Sicilian expedition which offered both 'the prospect of getting pay for the time-being, and of adding to the Empire so as to secure permanent paid employment in the future.' (Thuc. 6.24.3).

57 These speculative figures exclude seasonal trireme crews, agricultural labourers and farmers, who sought 'economically advantageous' employment on triremes during the peak sailing season of the summer when agricultural work was scarce; 'something which they did in addition to (or instead of) what they normally did.' Rosivach V. 1985, 44, 53–54.

58 Trundle 2004, 82–83.

59 de Ste. Croix 1981, 25, who mentions Marx's prescience in noting that 'the first appearance

business of running a maritime empire involved, as we have seen, regular deployments of Athenian triremes throughout the Aegean basin. Routine patrolling was a regular feature of the navy's activities in which the number of triremes is not likely to have varied enormously from year to year. To man these patrols, grain convoy escorts and ad hoc expeditions, required a more or less permanent pool of experienced sailors 'who returned year after year to row these vessels as part of their regular annual cycle of employment.'[60] As Aristotle indicates, there was a maritime industry which comprised not only the naval and merchant fleets, but which also included those who worked in fishing and on ferries (Arist. *Pol.* N1291b21–22). In these circumstances, it is highly likely that considerable numbers of experienced seamen found regular gainful employment, assisted no doubt, by switching between the various maritime sub-sectors as the dictates of circumstance demanded.

Given the scale of the navy there can be little doubt that a considerable proportion of Athenian trireme crews consisted of full-time professionals, both citizen and foreigners, who depended upon the navy for the bulk of their incomes, and who saw rowing triremes as 'a job of work' as distinct from a military service obligation.[61] It is an argument further emphasised by Trundle who states, 'most of the personnel in the Athenian and Spartan navies during the Peloponnesian war … were professionals, in that they were paid for their services, even the Athenian lower-status oarsmen'.[62] Indeed, such was the dependence of these professional rowers on naval employment that when work opportunities were scarce in Athens they sought employment in the naval services of other, even rival, poleis (Demosthenes 50.16, 50.14). As the instance of Apollodoros illustrates, these rowers were completely dependent on the navy for their incomes to provide financially for their households (Demosthenes 50.12). Amit stresses the importance of the navy as a source of income for the large thetes social class, 'the creation of a permanent navy offered renumerative (sic) work for the poorer citizens'.[63]

As Trundle points out, 'the enormous numbers of men required for such service and the time involved on naval campaigns meant that naval warfare was financially consuming in the way that land warfare was not.'[64] A brief compari-

of an extensive system of hired labour in antiquity is in the military sphere, the employment of mercenaries'.

60 Rosivach 2001, 15.

61 Whitehead 1977, 86.

62 Trundle 2004, 23.

63 Amit 1965, 61.

64 Trundle 2004, 12; Gabrielsen 1994, 105–125. I omit the whole area of payment in kind for

son of the numbers involved gives us some idea of the voracity of the manpower and finance demands of Athenian naval warfare as compared with those of land warfare. One year after Salamis the Athenians fielded a very sizable 8,000 hoplite army at the battle of Plataea (Hdt. 9.28.6), yet at the beginning of the Peloponnesian War Athens deployed a fleet of 250 first-rate triremes in active service throughout the summer months (Thuc. 3.17) requiring up to 50,000 sailors—over six times the size of one of its largest infantry mobilisations.[65] Even the manning of a squadron of a mere 30 triremes, in Gabrielsen's view, 'must have represented a labour-purchase transaction the magnitude of which was unmatched by most other sectors of the city-state.'[66] An even more significant dimension in comparing the resource consumption of naval and land army mobilisations was duration. A mobilisation for a battle such as Plataea would have taken at most some weeks, while the enormous naval deployments of the summer sailing season of 428 (or 430) could have lasted for several months at a time.[67] On this basis, it is easy to see how the navy's consumption of both manpower and financial resources were likely to have been many orders of magnitude greater than that of Athens' hoplite army.[68] Given these figures, it is almost certain that from the inception of the large-scale Themistoclean navy in the early 5th century the supply of citizen-sailors alone was likely to have been wholly inadequate to man its fleet of triremes.[69]

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which the terminology is even more fraught than for cash payment. Trundle has a lengthy discussion Trundle 2004, 84–90; see also Loomis 1998, 33–35.

65 The authenticity and reliability of this whole chapter has been severely questioned by some scholars: 'a misplaced chapter of Thucydides' text which may possibly not be by Thucydides himself.' Meiggs 1972, 259. However, Pritchett 1971 accepts the chapter, as does Hornblower 1991, 400–403, who changes the year from 428 to the earlier 430.

66 Gabrielsen 1994, 108.

67 Hornblower 1991, 402 Regarding hoplite pay of one drachma per day, Hornblower cites 3.17.4 as 'one of the most explicit pieces of evidence we have' but does not reference the fact that it is equally important evidence for rates of naval pay as Thucydides makes clear that sailors were also paid one drachma per day: 'the ships being all paid at the same rate.' (Thuc. 3.17.4).

68 Even this simple comparison ignores the extensive manpower and capital costs associated with the provision of ships and the infrastructure of shipsheds and docks essential for a functioning navy.

69 Meier 1990, 584; Hunt 1998, 11.

3 Athenian Trireme Crews

Our literary sources have not been very forthcoming on the composition of Athenian trireme crews. As a result, the question of who exactly comprised the 'naval mob' (Arist. *Pol.* 1304a, 1327a; Thucydides 8.72.) has been a matter of considerable debate within modern scholarship. Some, like Amit, have adopted a catch-all definition which encompasses 'sailors in the navy and merchant vessels, craftsmen working in shipbuilding and repairs, port workers'.[70] Similarly, van Wees' definition goes beyond the narrow focus on trireme crews to include 'the tens of thousands of people—mostly poor men, foreigners and slaves—required to build, maintain and man the fleet.'[71] Though the term 'naval mob' has been used infrequently in our sources, its pejorative connotations neatly sum up the elite's distain for sailors in particular, and more generally, for those employed in the wider naval sector.[72] For Aristotle, distain begat exclusion: 'Citizenship rights should only belong to those who possess hoplite heavy armour' (*Pol.* 1297b1–2) before concluding, 'there is no need for these people (common sailors) to be citizens' (*Pol.* 1327b8–9).

In recruiting rowers for his trireme crew, a trierarch's priority was to acquire the most skilled and experienced sailors available as the security of his property and even his life was in their hands. In such circumstances, the civic status of the rowers was unlikely to have been uppermost in his considerations. This competition among trierarchs in Athens, and indeed navies internationally, seeking to recruit the most experienced and skilled rowers kept pressure on wage rates and sometimes resulted in additional financial inducements, such as bonus payments, being offered (Dem. 45.85; 50.7, 15, 18; Lys. 21.10). To fund their naval liturgy expenses many trierarchs had to resort to borrowing (Dem. 49.6–8, 11–12, 15, 44; Xen. *Hell.* 6.2.11–12.)[73] There are examples in our sources of sailors on Athenian triremes abandoning or deserting a ship because of better offers or even the promise of higher wages or bonuses, some even did so on the realisation that their own commander's or trierarch's financial resources were exhausted (Dem. 50.12–16; Thuc. 8.83.2–3), resulting in commanders on campaign having to resort to a range of stratagems to raise sufficient funds to pay their sailors.[74]

70 Amit 1965, 62.
71 van Wees 2004, 200.
72 There may well be an insidious comparison at play here: the serried and ordered hoplite ranks as against an unorganised naval mob.
73 Gabrielsen 1994, 116–117.
74 Pritchett 1974, 102; Gabrielsen 1994, 111.

FIGURE 10 The *Olympias* under full oar-power
THE TRIREME TRUST ARCHIVE AT WOLFSON COLLEGE, CAMBRIDGE

For a variety of obvious reasons Athenian citizen rowers were less likely to desert than allied seamen who had far less compunction in the face of better financial rewards for service on enemy ships (Thuc. 1.31.1, 143.1; 7.13.2, 8.57.1; Xen. *Hell.* 1.5.4). There was also intense competition among trierarchs to recruit the most able and skilled *hyperesia*, especially *kybernētes*, who were thus able to command premium salary payments (Lys. 21.10).[75] The task of the upper level rowers, the *thranites*, was more demanding and required greater expertise and so they invariably received higher pay that the other rowers (Thuc. 6.31.3). In passing, it worth noting that all of this is corroborative evidence for a functioning naval labour market in Athens and across the Aegean. The basic rules of supply and demand were in play in which more arduous work or work requiring greater skills attracted higher pay or bonuses and, more generally, higher wages induced increased supply.[76]

75 Gabrielsen 1994,121. see Gabrielsen 1994, 121–124, for a full discussion of the importance of pay and bonuses in retaining naval crews.

76 This is not an argument for the so-called 'efficient market hypothesis' which became an article of economic faith from the 1970s onwards, until Keynes' 'animal spirits' reasserted themselves in a bout of what Alan Greenspan called 'irrational exuberance'. The ensuing market 'disequilibria' (stock market crashes or financial crises) placed a permanent question mark on the underlying assumption of immutable rational-decision making on the part of economic agents under conditions of uncertainty.

The importance of pay as an incentive for sailors is also emphasised by Xenophon. When Lysander took command of the Peloponnesian fleet in 407, Cyrus urged him to prosecute the war urgently, and to fund the effort he arrived with 500 talents adding, if that was insufficient 'he would mint coins using the throne on which he sat—which was made entirely of silver and gold.' (Xen. *Hell.* 1.5.3). Cyrus was then urged to increase the pay of the sailors to one and a half drachmas per day, as a consequence of which 'the crews of the Athenians would desert and he would thus spend less money' (Xen. *Hell.* 1.5.4). Though permitted by the King to provide only half a talent per month to support each Spartan trireme, subsequently he increased the daily wages from 3 to 4 obols, paid the sailors' back pay and also paid them one month in advance, 'with the result that they became much more enthusiastic' (Xen. *Hell.* 1.5.5–7). As these instances illustrate, the reason why finances, as Thucydides insisted, were critical to the Athenian navy was that money in the form of pay was of over-riding importance for its trireme crews. In this sense, Trundle is certainly correct when he says that 'naval warfare was a mercenary kind of warfare in the way that land warfare was not.'[77]

4 Mercenaries, Metics and Slaves

Identifying the exact composition of trireme crews has not been made easy by the fact that our sources, in the case of mercenaries for instance, use a variety of different terms, some of whose meanings changed over time: 'fighter alongside' (ἐπίκουρος) and 'wage-earner' (μισθοφόρος).[78] But just as importantly, this shift in terminology may also give us an inkling as to the changing structure of the Athenian political economy.

As has been noted previously, the prevailing elite ideology frowned upon work generally, but particularly work for a wage in the employ of somebody else as it was considered to be fundamentally at odds with a man's freedom (*eleutheria*) and independence (*autarchiea*) (Dem. 19.287). Thus, this varying nomenclature to describe mercenaries may have had an intentional element, as Plutarch suggests: 'the Athenians were in the habit of disguising the unpleasant aspect of things by giving them endearing and charitable names and finding polite equivalents for them.' (Plut. Sol. 15.3). Herodotus invariably uses *epikouroi* for either mercenaries or allies (Hdt. 1.154, 2.152.4, 163, 169, 3.4.2, 11.3, 54.2,

77 Trundle 2004, 12.
78 For a full discussion see Trundle 2004, 12–24.

146.3, 6.39.2), but in describing Peisistratus' third and successful attempt to conquer Athens with the aid of mercenaries, he uses *misthophoroi* and not *epikouroi* (Hdt. 1.61.4). The only other instance of Herodotus' use of *misthophoroi* is for another 6th century tyrant, Polycrates, who possessed both *epikouroi* and *misthophoroi*: 'who had a great army of hired soldiers and bowmen of his own' (τῷ ἐπίκουροί τε μισθωτοὶ καὶ τοξόται οἰκήιοι ἦσαν πλήθεϊ πολλοί) (Hdt. 3.45.3). In a similar way, the later writer Diodorus also associates the 5th century Sicilian tyrants with mercenaries, mainly using the word *misthophoros* (Diod. 11.48.3, 53.3, 67.5). Most frequently Thucydides uses *epikouroi* in referring to mercenaries (Thuc. 1.115.4, 2.33.1, 70.3. 3.18, 34.2, 73, 85.3, 4.46.2, 6.55.3, 58.2, 8.25.2, 28.4, 38.3) but sometimes also, *misthophoroi* (Thuc. 1.35.4, 3.109.2, 6.43, 7.57.3, 58.3). Of the seven occasions in which Thucydides uses *misthophoros*, revealingly, three occur in one passage describing those who participated in the Sicilian campaign for whom, he says, one of the principal motives was 'their own interest' (Thuc. 7.57.1). Xenophon replaces *epikouros* with *xenos* and *misthophoros*, however, he reserves *xenos* for mercenaries fighting with his army and *misthophoros* for those mercenaries fighting for the enemy: a neat euphemism in line with Plutarch's observation above.

Despite what appears to be a somewhat random use of various terms to describe mercenaries in our sources, there is a discernible shift in the pattern of usage during the latter part of the 5th century which may provide us with a heuristic method of identifying change in the overall political economy. As Humphreys notes, the Peloponnesian War was instrumental in causing a structural change in the Attic labour market away from the agriculture to a greater dependence on various forms of state payments.[79] In tandem with this, as we have seen above, there was also an increasing tendency within later sources when writing about events from around 430 onwards to use *misthophoros* to describe those who served in the military for pay.[80] As Thucydides and Xenophon amply testify, money and naval power went hand in hand.[81] Given the ubiquity of pay for service in the fleet, the increasing use of *misthophoros* may be indicative of a growing elision of the categories of mercenary and paid rower such that within the navy it was becoming a distinction without a difference.

79 Humphreys 1979, 14,16–7,24.

80 Trundle 2004, 19.

81 Kallet-Marx 1993, 28–30 makes the important point that Thucydides establishes 'the central importance of *chremata* and *nautika*, or financial resources and ships in which 'the instances of *chremata* thus far suggest a concern above all with usable wealth' (Thuc. 1.11, 1.8.3) Kallet-Marx 1993, 30.

In his discussion of the Athenian navy, Trundle points out that 'the importance of money and pay to fifth- and fourth-century naval warfare was never underestimated' and concludes that 'the image of naval warfare is of a very mercenary and capital intensive system of supply and demand.'[82] The pace of professionalisation that was set in train by the navy in the earlier part of the 5th century was soon being emulated by the land army: 'Athenian citizen hoplite soldiers had followed their poorer counterparts in the fleet by no longer serving by property class from their own resources (albeit with a ration allowance) but instead of being assimilated to mercenaries in their relationship to the state as paymaster.'[83] Mercenaries played an increasingly important role across the Athenian military as we move from the 5th to the 4th century, with the growing importance of personal gain (*kerdos*) for many of those participating in the navy being highlighted by Thucydides (7.57.9–10).

Apart from citizens, both ancient sources and modern scholarship agree that metics are the only other category of sailors that were a regular feature of Athenian triremes, though the numbers and proportions elude us. To the extent that it is a reflection of the realities of 480, the Themistocles' decree indicates that the Athenian fleet was manned by both citizens and metics.[84] Writing around the period of the Peloponnesian War, the Old Oligarch confirms that metics were an essential part of the Athenian navy: 'the polis needs metics both because of their craft skills and because of the fleet' (Xen. *Ath.* 1.12). This is corroborated by Thucydides who states that in the summer of 428 Athens launched an expedition of 100 triremes manned by both citizens and metics (Thuc. 3.16.1). Amit, while accepting that mercenaries were part of trireme crews argues that slaves were only employed rarely and in limited numbers, with the largest and permanent role played by citizens and metics. Cartledge argues for the predominant role of citizen rowers but accepts the regular presence of other categories on Athenian triremes which 'always contained a strong or dominant citizen component, but rarely if ever would the citizen rowers not be accompanied by hired foreigners and, even more controversially, slaves.'[85] However, Amit is correct in concluding that 'it is not possible to assess accurately the proportion of the four classes of sailors in the Athenian navy'.[86]

The only extant epigraphical evidence for the composition of Athenian trireme crews is *IG* I^3 1032, which provides documentary proof that all four

82 Trundle 2004, 40.
83 Davies 1992, 305.
84 Hammond 1982, 88.
85 Cartledge 1998, 64.
86 Amit 1965, 49.

social categories were part of trireme crews, an important corroborative complement to what Thucydides has to say regarding trireme crews during the Sicilian campaign (Thuc. 7.13.2). From the crew lists contained in *IG* 1[3] 1032 it has been calculated that slaves comprised between 20% and 40% of the trireme crews.[87] A further feature of the list of names contained in this inscription is its confirmation that citizen slave-owners served as *epibatai* and members of the *hyperesia* while their slaves served as rowers. Additionally, it instances a case where a citizen slave-owner and his slave both served together as rowers.[88] This would seem to suggest that the employment of their slaves along with themselves offered an additional revenue opportunity for some citizen members of Athenian trireme fleets. Graham argues that the inscription confirms Thucydides' information and that 'slaves regularly formed a substantial proportion of the rowers on Athenian triremes, and their masters included fellow oarsmen.'[89] Based on this epigraphical evidence, Hunt suggests that 'the navy upon which Athens' power rested may have contained about as many slaves as Athenian citizens.'[90] It was a naval reality at considerable odds with the regnant elite ideology in which the congruity of citizenship rights with military service was held to be sacrosanct. Unsurprisingly, the unpalatable reality of slave involvement in the fleet does not get top billing in our elite-influenced accounts of naval warfare. Such reticence on the part of our ancient literary sources is understandable, its acceptance by much modern scholarship, despite considerable evidence supporting slave participation, is clearly less so.

Slaves were widely used as rowers in Greek navies. As argued by Hunt, 'competition among cities transformed the ability to man large numbers of ships into the necessity for doing so; Athens was not the only wealthy, slave-owning state in Greece.'[91] When Athens, along with the rest of Greece, had to confront an overwhelming Persian threat at Salamis in 480, the manning of 200 triremes with citizens alone would have been a practical impossibility. Faced with such an existential threat, some scholars have argued that Athens had little choice but to avail of every able-bodied male on a needs-must basis, and so have concluded that 'slaves constituted part of the navy that defeated the Persians.'[92]

87 One of the most complete discussions is Laing 1966, but also see Graham 1998, which includes recent bibliography.

88 Osborne 2010, 88–89.

89 Graham 1998, 110.

90 Hunt 1998, 2.

91 Hunt 1998, 11.

92 Hunt 1998, 41. Hunt also contends that for largely ideological reasons 'ancient historians tended to avoid the subject of slaves in warfare.' Hunt 1998, 43.

An indication of the importance of the use of slaves in warfare can be also be gauged from the use of the tactic of encouraging slave defections by offering the inducement of freedom to slave fugitives from enemy ranks. Yet overall, slave rowers in the Athenian navy occupy a marginal position in our principal sources, especially Thucydides, who only makes passing and indirect references to their existence as part of trireme crews.[93]

In his description of the various groups capable of contributing to Athens' naval effort, Thucydides' Pericles mentions citizens, metics and mercenaries but avoids any mention of slaves. From an ideological perspective this is understandable as such a reference would be a flagrant breach of the pervasive Athenian world view which not only placed slaves at the bottom of the social order, but saw them as fundamentally cowardly and unfit for war. A similar diffidence with regard to slave rowers informs Thucydides' narrative of the battle of Sybota (433). Here Thucydides informs us that of the over 1,000 Corcyraean prisoners taken at sea by the Corinthians, 'eight hundred of the Corcyraeans were slaves', but offers no further comment on this tantalising observation (Thuc. 1.55). As part of his elaboration of the reasons for the degradation of his Sicilian fleet's combat capacity, Nicias mentions increased desertion by slaves and the fact that the foreign mercenaries negotiated with their trierarchs to accept 'slaves on board in their place' (Thuc 7.13.2).[94] The most comprehensive scholarly analysis of these passages from Thucydides is provided by Graham whose succinct conclusion is 'that there were slaves among the original crews of the Athenian warships in Sicily.'[95]

In 412, following the revolt of Chios from Athenian suzerainty in the wake of the Sicilian disaster, the Athenians withdrew the seven Chian triremes from the siege of Spiraeum in the Saronic Gulf and imprisoned the freemen sailors but, gave 'the slaves on board their liberty' (Thuc. 8.15.2). As these slaves were part of the crew complement of a standard Chian trireme squadron, Hunt concludes that 'there is no reason to think that this practice was anything but routine.'[96]

93 Usually referring to 'free men' members of the crew, with the understated though obvious inference that at least some of the other crew members were slaves (Thuc. 2.103; 8.15.2; 8.84.2).

94 Hornblower 2010, 563–564, contains a comprehensive summary of more recent scholarship on the role of slaves in the Athenian navy which concludes that 'there were ascertainable slave masters among both citizen, foreign, and metic sailors.' Hornblower 2010, 564.

95 Graham 1992, 259.

96 Hunt 1998, 86. This defection by Chios to the Spartan cause constituted a major military set-back for Athens as, of all her allies, Chios was 'the greatest of their number' (Thuc. 8.15.1). In this context, it is also worth noting Thucydides' statements that not only were

Recognising the extensive involvement of slaves in most Greek navies, some of our other sources are less coy in referring to the participation of slaves in trireme crews. Xenophon shows Kephisodotos arguing for a joint command of the military forces of the new alliance between Sparta and Athens (369), and against the proposed separation of commands of the land army by Sparta and the navy by Athens. His reasons were simple and ideological: the Spartan navy was largely composed of slaves and mercenaries while the Athenian hoplites were citizens, therefore 'they will command Athenian citizens while you will command their slaves and men of the least worth' (Xen. *Hell.* 7.1.12–13).

But as is often the case, the Old Oligarch is the ancient author who, in the words of Osborne, offers 'an analysis which, makes sense in political, social, and, perhaps most remarkably, economic terms.'[97] He is also the one who provides the most explicit source evidence for slave rowers in the Athenian navy. Writing during the Archidamian War (431–421),[98] he states that because of their extensive need to travel abroad, 'Athenians *and their attendants*, without noticing, have learned how to row … he *and his servant* take an oar and learn the names of things concerned with seamanship' (Ps. Xen. 1.19) (emphasis added). Even more pertinently for our purposes, the Old Oligarch makes an explicit link between the role of slaves in the navy and their capacity to earn wages: 'where power is based on the navy, because of the need for money there is no choice but to end up enslaved to slaves, so that we can take a share of their earnings' (Ps. Xen. 1.11). It is a view shared by one of modern scholarship's authorities on the role of slaves in Greek warfare: 'Slaves did not fight because of any acceptance of their oppression, but because of practical inducements and constraints.'[99]

The long-standing view within orthodox scholarship has been that, other than in exceptional circumstances, slaves did not participate as members of the Athenian rowing crews though, somewhat paradoxically, their participation in other Greek navies is generally accepted. The standard orthodoxy, as related by Casson, is that Athenian trireme crews 'were made up of her citizens, mostly the poor …; there was an admixture of foreigners—but no slaves.'[100] In the intensely competitive naval labour market of the 4th century,[101] when

the Chians 'the richest people in Hellas' but also that 'there were more slaves at Chios than in any other city except Sparta' (Thuc. 8.45.4;8.40.2).

97 Osborne 2004, 7.
98 Mattingly 1997, 352.
99 Hunt 1998, 23.
100 Casson 1995a, 322.
101 In economic terms, the Athenian naval labour market consisted of one aggregate supply

Athens 'was being outbid by, and losing rowers, to third-rate naval powers like Thasos or Maroneia', he contends, somewhat perversely, that 'in a context such as this, slave rowers simply have no place.'[102] Morrison offers a reluctant acceptance of a minimalist role for slave rowers on Athenian triremes, arguing, 'slave oarsmen were unusual in Athenian ships at this time', and then cites the fact that the slave rowers who served on the Arginousae relief expedition (406) were offered their freedom 'indicates that their service in the fleet was unusual.'[103] For much of this scholarship, Arginousae is the exception that proves the rule for the non-participation of slaves in the Athenian navy. Much is made of the fact that slave deployment was so exceptional that the Athenians took the unprecedented step of not only freeing the slaves in question, but also giving them Athenian citizenship—an action, so this argument goes, that was truly *hors de catégorie*.[104]

However, Hunt makes a convincing case for a radically different interpretation of these events.[105] His counter-argument is premised on the fact that the late 5th century in the Aegean basin was a time of intense competition for naval crews to man the unprecedently large navies of the period. The demand pressure in the naval labour market was so intense that it went beyond the normal categories of mercenaries and metics, and 'extended even to slaves.' Because of these manpower shortages, slave rowers had become essential to the functioning of the large-scale Athenian fleet such that any serious reduction in the available pool of slave rowers could have had parlous military consequences.[106] It was to maintain the allegiance of its slave rowers, and discourage them from defecting to the enemy, that Athens took the unprecedented step of giving them both their freedom and citizenship.

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curve (citizens/thetes, metics, mercenaries and slaves) and one aggregate demand curve (competing trierarchs) with a (variable) market clearing equilibrium wage rate.

102 Casson 1995a, 323–324.

103 Morrison et al. 2000, 118. The oft-quoted original argument for the deployment of slave rowers in the Athenian navy only in extremely exceptional circumstances is Sargent 1927. Her principal contention was that rowing triremes was a lucrative state-funded profession only for 'freemen, that is, citizens, metics, and non-resident foreigners, to serve in the navy as oarsmen to whom of course the commanding officer could, if he desired, give additional bounties.' Sargent 1927, 468.

104 Casson 1995a, 322, who states that 'the fanfare aroused shows how exceptional this step was'.

105 Hunt 2001, 359.

106 At this time (406) Conon had to set sail from Samos with only 70 of his fleet of 100 available triremes because of crewing difficulties (Xen. Hell. 1.5.20).

5 The Trireme School of Democracy

The debate on the composition of Athenian trireme crews has been driven primarily by the assertion in some of our sources of a putative causal association between extensive participation by thetes as rowers in the fleet and the development of radical democracy in Athens (Arist. *Pol.* 1304a22–24). According to Plutarch, a direct consequence of the advent of naval power at Athens was that 'control of policy now passed into the hands of sailors and boatswains and pilots' (Plut. *Them.* 19.4). However, van Wees suggests that this linkage between sea power and democracy is essentially a retrospective ideological construct designed to justify democracy by emphasising its all-inclusive nature, including encompassing the lowest social strata, the thetes.[107] But for our purposes, what is most noteworthy about this ongoing debate on the political outcomes of Athenian naval power is that it has largely overwhelmed any discussion of its economic significance. In this context, Whitehead has made the astute observation that in this debate 'what is overlooked is that rowing a trireme was a paid job, *for all concerned*' (emphasis added).[108] There was a fundamental difference between the ideology of the army and that of the navy in which the latter, despite the watershed victory of Salamis, never achieved the ideological pre-eminence of the 'quasi-liturgical character of hoplite service'.[109] Yet, in economic terms, 'there is a vast difference between a whole summer's wages and a few obols with a bag of cheese and onions for a sortie into Boeotia or the Megarid.'[110]

For Strauss, the thetes' sense of collective class consciousness arose because, 'manning an oar on an Athenian trireme was largely a communitarian and egalitarian effort … an important part of the political education of the Athenian thete …'[111] Though Strauss accepts that 'the plain fact is that many of the oarsmen on Athenian triremes were metics, allied merecenaries (sic), or, far less often, slaves', he insists that the political consequences of this accrued exclusively to the thetes. He goes further by arguing that the Athenian thetes' trireme experience inculcated 'a characteristic of the social imaginary of the trireme, liberty … the liberty in question was that of the thetes, the poorest Athenians who manned the ships.'[112] By way of evidence that this posited innate

107 van Wees 2004, 83.
108 Whitehead 1977, 86.
109 Whitehead 1977, 86.
110 Whitehead 1977, 86.
111 Strauss 1996, 317.
112 Strauss 1996, 318.

love of liberty of Athenian thetes rowers was unique to them and not part of Peloponnesian rowing culture, Strauss cites two examples: one is Phormio's attempt to reassure his sailors who were fearful because of 'the odds against them' (Thuc. 2.88.1); and the other a Peloponnesian incident where the crew reacted angrily to a violent rejection of their pay demands by their commander (Thuc. 8.84.2–3). Strauss' interpretation is that these incidents convey 'a blunt message: Athenian triremes are sites of free and rational debate, while Peloponnesian triremes subject *eleutheroi* to emotion, compulsion, and violence.'[113]

But such generalised stereotyping is not warranted by the limited evidence of these two incidents. They were fundamentally different in nature: the Athenian one was a case of eve-of-battle nerves in which intimations of mortality needed to be assuaged, while the Peloponnesian incident was a row over a collective pay demand. Indeed, Strauss ignores a telling phrase of Thucydides who describes the violent reaction of the Syracusan and Thurian free men sailors as being 'in sailor fashion' (οἷα δὴ ναῦται)—the implication being that sailors would normally behave this way when faced with a violent rejection of their pay demands (Thuc. 8.84.3). Even more problematic is the fact that Strauss completely ignores directly comparable evidence in the immediately preceding passages of the Phormio example in which the Peloponnesian navarchs, Cnemus and Brasidas, deliver an eloquent and rational 'pep talk' (to use Strauss's term) to their equally 'cowed' sailors facing the same naval battle and experiencing a similar bout of pre-battle nerves (Thuc. 2.86.6–2.87.9).

The 'Trireme School' posits the emergence of a class consciousness among the thetes as a direct result of large numbers of them rowing together on triremes. Their collective trireme experience created the ideological foundations for an abiding affinity for democracy which ultimately provided a critical impetus for the development of a radical democracy in Athens.[114] While virtually all aspects of naval matters were of significant political importance within the Athenian political system, there is little evidence for any sustained or coordinated naval faction operating, for instance, within the Assembly. Certainly, evidence for a naval faction founded exclusively or even predominantly on the thetic class is impossible to discern within our sources. The sole exception to this, which is constantly referenced as proof positive for the postulated democratic proclivities of the thetic class, is the role of the navy at Samos during the oligarchic coup of 411. Modern scholarship is virtually *ad idem* in proclaiming the democratic credentials of the Athenian navy, citing in particular 'the strong

113 Strauss 1996, 319.

114 As previously noted, this is the naval equivalent of the 'hoplite school of democracy' and is a hypothesis most clearly and ardently argued by Strauss 1996, 316–319.

democratic sentiments of the sailors at Samos',[115] who opposed the oligarchic takeover of Athens in 411 where 'their group solidarity manifested itself most dramatically'[116] creating an 'entirely democratic fleet'.[117] The extended analysis which this episode warrants is beyond our current scope, however, even a brief review of the behaviour of the Samian fleet's sailors may suffice to raise questions regarding orthodox scholarship's interpretation of these important events, and its portrayal of the sailors of the fleet as irrepressible democratic incorruptibles.[118]

As Thucydides points out, the origins of the oligarchic coup itself are to be found within the fleet at Samos where the plotters, 'formed their partisans into a conspiracy, and openly told the many that the King would be their friend, and would provide them with money, if Alcibiades were restored, and the democracy abolished.' (Thuc. 8.48). It was Alcibiades connections with Persia and the satrap Tissaphernes in particular, according to Thucydides, that were instrumental in persuading the fleet at Samos to voice decidedly anti-democratic sentiments and to align itself with the oligarchic coup whereby: 'the Athenian trierarchs and the leading men set themselves the task of overthrowing the democracy.' (Thuc. 8.47.2). Shortly thereafter a motion to this effect was unanimously passed by the fleet at Samos. Thucydides makes clear that the critical inducement that persuaded the mass of the sailors to adopt this distinctly anti-democratic line of action, despite their initial scepticism, was the 'prospect of pay from the King' (Thuc. 8.48.3).[119] As Kagan stipulates, the unambiguous implication of this was that 'the Athenian forces at Samos were prepared to allow the restoration of the traitor Alcibiades and an attenuation of their beloved democracy because of greed.'[120]

Accusations of cupidity by some modern scholarship whose democratic sensibilities may have been offended by the Samian sailors apparently insouciant disavowal 'of their beloved democracy' seem harsh. Given the precariousness of their circumstances, with diminishing prospects of pay, the sailors' response was essentially a rational one. Their position has been accurately summarised by Potts: 'while the "naval mob" might prefer democracy to oligarchy, it was

115 Forsdyke 2005, 190.
116 Strauss 1996, 317.
117 Kagan 1991, 266.
118 Taylor 2010, 225–277, offers an extensive critique of the Athenian fleet's commitment to democracy arguing that 'the Athenians on Samos needed to be prodded by the Samians to begin to resist the oligarchy' 237 n. 19.
119 The prospect of financial gain was similarly proffered by Thucydides as the basis for popular support of the Sicilian expedition (Thuc. 6.24.3).
120 Kagan 1991, 121.

prepared to accept either on the reliable promise of regular wages.'[121] In a detailed analysis of this Samian episode, Taylor concludes similarly that 'the democratic sailors of the Athenian fleet, although upset "for the moment," were quickly reconciled to oligarchy as long as it brought them their pay (8.48.3).'[122] Shortly thereafter, however, the fleet changed its mind, deposed its generals and decided to try to restore democracy in Athens (Thuc. 8.76.1–3), a *volte face* interpreted by modern scholarship as nothing less than the sailors at Samos giving expression to their innate democratic sentiments and allegiances. But Thucydides offers more prosaic reasons for the fleet's change of heart. The sailors at Samos realised that 'they had the whole fleet with which to compel the other cities in their empire to give them money' and that in abandoning Athens 'they had lost nothing in losing those who had no longer money to send them—the soldiers having to fend for themselves' (Thuc. 8.76.6).

The question of who exactly comprised the crews of the Athenian fleet at Samos is of immense importance in evaluating the claims that the sailors there constituted themselves as the demos of Athens. When Thucydides speaks of their assemblies he refers to sailors variously as 'the multitude/mob', the 'naval mob' but mainly as 'the soldiers' (*hoi stratiotai*) and scholarship largely assumes he is referring to the citizen element only.[123] However, more controversially, in his discussion of this issue, Potts, contends that when using the term *hoi stratiotai* especially in the context of public assembly meetings, Thucydides is referring to all the freemen of the fleet including, citizens, metics and mercenaries.[124] To help throw further light on this important issue we need to understand the origins and size of the principal contingents that constituted the Samos fleet in 411.

The Athenian fleet based at Samos from 412, and which broke with the oligarchic regime in 411, comprised not only the initial major expeditionary forces from Athens but also several smaller fleets operating in the eastern Mediterranean at the time and consisted of around 108 triremes with up to 21,600 sailors (Thuc. 8.79.4–6). As such, the crews of the fleet at Samos could not possibly have been composed solely of citizen rowers. In fact, given the large-scale

121 Potts 2008, 202.

122 Taylor 2010, 240.

123 Amit 1965, 43–46 who argues that all these terms are equivalents and concludes that in the fleet at Samos 'citizens were at least a very large proportion.'

124 Potts 2008, 171–173 *Contra* Amit. Potts, following a detailed analysis concludes that the term οἱ στρατιῶται used by Thucydides includes all those on campaign except slaves. In a similar manner, Thucydides has Nicias attempt to revive the flagging spirits of his troops in Sicily and refers to them as ἄνδρες στρατιῶται Ἀθηναίων τε καὶ τῶν ἄλλων ('men of the campaign, both Athenians and their allies,' Thuc. 7.61.1).

demand for naval manpower by all sides in this conflict, a very significant portion of the fleet at Samos is likely to have consisted of mercenaries, metics and slaves, with citizen thetes almost certainly being out-numbered by a combination of the rest.[125] This makes the claim by Amit, as well as other modern scholars, that the fleet at Samos had 'declared themselves the demos of Athens' to be somewhat incongruous.[126] It also gives rise to the following conundrum: on the one hand, if the Samian fleet that decided to break with Athens included all the sailors 'is it possible that mercenaries and slaves would revolt for the sake of the democratic regime at Athens?'[127] On the other hand, is it realistic, with talk of revolt and mass subordination in the air, that these same metics, mercenaries and slaves would simply stand aside and allow the citizens to decide their fate?

The one part of the Athenian navy which is presented by Thucydides as being composed of ardent democrats is the crew of the *Paralos* which was ideologically opposed to oligarchy 'even when there was no question of such a thing existing' (Thuc. 8.73.5). Uniquely, of all the triremes at Athens' disposal we have clear source evidence that the *Paralos* was crewed exclusively by Athenian citizens and freemen; 'entirely of Athenians and free men' (Thuc. 8.73.5). What is far less clear is that the ideological commitment of the *Paralos* crew reflected that of the generality of common sailors at Samos. Unaware that the Four Hundred had taken power in Athens, the *Paralos* was dispatched to Athens to relay the news of the failure of the oligarchic coup at Samos and were arrested on arrival. But Chaireas, the *Paralos*' captain escaped and returned to Samos delivering a lurid account of events in Athens involving murder, torture and rape 'in which everything was exaggerated' (Thuc. 8.74). On hearing of these accounts of the tyranny at Athens, at the instigation of Thrasyllus and Thrasybulus, the fleet at Samos reversed its position and vowed to oppose the Athenian oligarchic regime, establish a democracy at Samos and continue with the war against Sparta (Thuc. 8.75.2–3). But given their previous dalliance with oligarchy, it is unsurprising that the sailors' return to the path of democratic righteousness had to be underwritten by an additional publicly declared oath 'to act democratically' (Thuc. 8.75,2).

125 This is likely to have been the case considering that this expeditionary fleet was launched immediately following the enormous manpower losses resulting from the Sicilian disaster.

126 Amit 1965, 44. Potts 2008, 169–180, provides an excellent discussion of the issues surrounding the fleet at Samos upon which I have relied.

127 Amit 1965, 44. Indeed, Amit uses this precise logic to argue that 'this episode shows that a large proportion of their crews were Athenian citizens.'

In recognition of the stark realities that without the support of the fleet at Samos the oligarchic regime would founder it dispatched a delegation to Samos to explain events in Athens in the hope of ensuring the ongoing allegiance of the sailors. The envoys who arrived from the Athenian oligarchs rejected Chaireas' (of the *Paralos*) slanderous account of events in Athens and promised the sailors that their families were not being ill-treated and were 'in undisturbed enjoyment of their property just as they had left them' (Thuc. 8.86.3). In dismissing the ambassadors, Alcibiades, who had prevented the fleet at Samos from attacking Athens, suggested a compromise: acceptance of a wider-based oligarchy, reinstatement of the Council of Five Hundred and economic retrenchment to better secure military pay (Thuc. 8.86.6). Alcibiades' inclusion of the pay reference here is a shrewd recognition of a persistent preoccupation of the sailors at Samos (and elsewhere)—an abiding concern for the material well-being of themselves and their families. From this short analysis of events at Samos, it would seem that Athenian trireme crews' allegiance to democracy was of a more inconstant and money-dependent variety than the immutable ideological commitment that much modern scholarship would have us believe. A marked preference for material entitlements over ideologically inspired idealism was also in keeping with the probably more than usually heterogenous composition of the Athenian trireme crews[128] at Samos at this time,[129] in which citizen thetes may well have constituted a minority.[130]

Even the vaunted unflinching democratic fidelity of the *Paralos* crew may have had more prosaic economic underpinnings. According to Jordan, the *Paralos* trireme was, uniquely, administered by an elected *tamias* and its citizen crew members were bound by 'ties stronger than those which spring from common political sympathies or from loyalty to shipmates.'[131] Additionally, the *Paralos* crew 'received certain perquisites from the state ... (and) at least a part of their emolument in cash amounting to four obols per day.'[132] The suggestion seems to be that these crews were employed on an all year round basis and, because of their role as a special dispatch vessel they were, so to speak, always on-call. Because of their full-time status, their daily pay rate of 4 obols was

128 Referred to by Thucydides variously as 'the multitude' and the 'naval mob'.

129 The large-scale demand for naval manpower occasioned by the Ionian war, plus the fact that the major part of the Samos fleet had been launched from Athens in the wake of the enormous losses of naval service men in the Sicilian disaster, meant that more than ever a very large proportion of the Samian fleet was composed of mercenaries, metics and slaves.

130 *Contra* Amit 1965, 44–46, who avers that 'citizens were at least a very large proportion'.

131 Jordan 1972, 174, who also suggests that the *Paralos* tamias was a survival of archaic naukraroi. Jordan 1972, 177.

132 Jordan 1972,176.

less than the average one drachma per day paid to standard rowers who were only paid for days actually worked.[133] In this respect, the trireme rowers of the *Paralos* were, in modern parlance, full-time public servants whose overlapping ideological and material interests are unlikely to have been entirely fortuitously coincidental.

The cosmopolitan realignment of Athens discussed previously was inevitably reflected in the composition of Athenian trireme crews. The paucity of the evidence makes it impossible to determine the precise representation of the four social groups in Athenian triremes at any particular time.[134] However, while it is likely that citizens may have predominated in the early 5th century, given the manpower shortages that ensued on foot of the increasing demands of war later on, citizen-rowers were unlikely to have been the dominant social group in trireme crew complements from as early as the end of the Peloponnesian War. In Gabrielsen's view, 'on many occasions, the citizens aboard the triremes were just a distinguished, small minority.'[135] For Athenian citizens, the reality of rowing on a trireme, the putative 'cradle of liberty', meant rowing with metics, foreign mercenaries and, more controversially, slaves, and thus were 'vulnerable to the literal taint of guilt by servile association.'[136] If one accepts the core of the 'trireme school of democracy' argument that the navy was also the 'cradle' of radical Athenian democracy, it is clear that the hands that rocked it were not uniquely thetes. But how exactly did the act of trireme rowing in itself foster a desire for political empowerment only among the thetes in the context of a naval reality in which a significant proportion of trireme crews consisted of non-citizens?

As I have tried to illustrate, the nexus of citizen-thetes rowers and radical democracy rests on weak evidential foundations and yet has acquired *ex-cathedra* status within some modern scholarship. Repetition has certainly been a factor but, as Ceccarelli and van Wees have argued, it is largely a retrospective ideological construct promoted by partisan elite ancient sources and adopted uncritically by many modern scholars.[137] Gabrielsen also claims that the cause and effect relationship between the navy and democracy 'is part and parcel of a larger ideological construct' while arguing further that ancient and modern claims for a prominent role of the thetes in the Athenian navy 'have barely any

133 Potts 2008,103–104.
134 Gabrielsen 2002, 210, who suggests that 'this seems to me to be both an impossible and a futile exercise.'
135 Gabrielsen 2002, 211.
136 Cartledge 1998, 64.
137 Ceccarelli 1993, 444–470; van Wees 1995 158–160.

basis in historical reality.'[138] Critics such as van Wees, while accepting the reality of a thetes quest for increased political power maintain, however, that 'the rise of the fleet did *not* cause the emergence of radical democracy' and that prior to the advent of the navy the thetes '*already* cherished political ambitions.'[139]

The contours of this debate may also provide an illustration of a disquieting tendency operating within ancient scholarship, identified by Millett in his criticism of Ober's sociological analysis, whose 'insistence on the primacy of political structures and ideology masks the economic dimension'.[140] It is a rarely expressed counsel against an all too common inclination in ancient scholarship to take insufficient account of economic factors in general, and the economic motivations of historical actors, in particular. Fundamentally, this is a form of negative exceptionalism in which scholarship's ready acceptance of intentionality on the part of classical Athenians with respect to social, political and military affairs is severely circumscribed when it comes to matters of economic agency. This has contributed to a wholesale aversion to employing the important diagnostic tool of economic analysis in ancient scholarship. On occasions, what emerges amounts to little more than sociological impressionism which is both premised on and promotes a disjuncture between social/political/cultural and economic phenomena. The outcome, as in the instance of the 'trireme school of democracy', offers monocausal cultural or ideological explanations for the emergence of complex historical phenomena which, devoid of the leavening effect of an economic dimension, ultimately flatters to deceive.

As the evidence adduced in the preceding discussion has shown, the Athenian navy was unique in at least three important respects. Together with its ancillary industries it was the single largest employer of freemen labour (citizens, metics and mercenaries) of any industry in Athens for which we have evidence. Second, it was largely a professional industry in which substantial numbers of sailors found regular employment and in which they earned most, if not all, of their incomes. Third, it was fully monetised in that sailors were paid in cash with the hardest of hard currencies—Athenian Owls. In the light of this it is unsurprising that the one constant in Athenian sailors' behaviour has been their readiness, both as individuals and collectively, to act to defend and/or promote their economic interests (usually expressed in terms of their pay). There is overwhelming source evidence that, for reasons to do with their

138 Gabrielsen 2002, 215.
139 van Wees 1995, 161–162.
140 Millett 1993, 182.

pay, sailors deserted, joined particular trierarchs for higher wages, were paid bonuses, threatened mutiny, joined enemy fleets and, as the Samos episode shows, were even prepared to support an oligarchic tyranny and then switch back again, depending on which direction the financial winds were blowing.

CHAPTER 11

The Ancient Athenian Naval Economy

1 Economic Growth

In recent decades an emerging field of scholarship has focused on estimating the scale and growth of the ancient Greek economy, including attempts at measuring classical Athenian GDP.[1] This expanding literature on the quantification of the structure of ancient economies, replete with revealing comparisons with other periods in economic history has gathered pace at an impressive rate.[2] The results of this scholarship have challenged the long-standing consensus on the ancient economy of Greece.[3] There is an emerging view that throughout the 5th and 4th centuries ancient Greek living standards were on an upward trend and that by pre-modern standards ancient Greece was well developed.[4]

There are two types of growth: aggregate or extensive growth, and per capita growth. In the former an increase in population alone can lead to increases in GDP. There is increasing evidence that there was demographic growth in ancient Greece, which has been estimated to have averaged 0.4 % for over three centuries.[5] Likewise for another leading indicator of economic development, urbanisation, where Greece was up to 30 % urbanised,[6] compared to 10–12 % for Rome,[7] with Rome's 10 % figure putting it at the same level as that of pre-modern states such as Britain, France, and Germany in 1600.[8] Between 800 and 300 Morris estimates that per capita consumption in Greece increased by between 50 % and 95 %.[9] Based on Morris' figures Ober has estimated that this is an annual growth rate of 0.15 %, a level that was 50 % greater than that of Rome three centuries later.[10] These are impressive levels of economic growth

1 Manning, Morris 2005; Scheidel et al. 2007; Fleck, Hanssen 2006; Lyttkens 2006; Karayiannis, Hatzis 2012; Kyriazis 2009; Pitsoulis 2011.
2 Foxhall, 1992, 2002; Milanovic, 2007; Ober, 2010; Osborne, 1992; Kron, 2014; Ober 2008; Scheidel, 2010.
3 Morris 2004, 2005, 2007.
4 Scheidel 2010, 3.
5 Morris 2004, 728.
6 Ober 2010, 11.
7 Scheidel 2009, 11–12.
8 de Vries 1984, 39.
9 Morris 2004, 726.
10 Ober 2010, 8.

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especially when one considers that Roman economic growth is believed to have been on a par with the levels of growth achieved by early modern European economies.[11]

Overall, this more recent scholarship has concluded that the ancient economy of Greece outpaced that of the later Roman Empire and bears favourable comparison with some of the more advanced economies of early modern Europe. A significant conclusion of this scholarship is that not only was there economic growth in ancient Greece in absolute terms, but there was relative growth as well because at a time when its population was expanding GDP per capita also increased.[12]

As the rising economic tide lifted all Greek boats, it is unsurprising that, as the leading polis of the classical period, Athens' political economy fared particularly well. This has prompted several attempts at quantifying the absolute level of Athenian GDP. Goldsmith, for example, arrives at a GDP figure of 5,000 talents by multiplying the Athenian labour force of 140,000 by the average wage of 1 drachma by 250 working days.[13] On a similar basis, but using slightly different figures for the labour force and the number of working days and adding a figure for the return on capital, Bergh and Lyttkens calculate Athenian GDP at 7545 talents at a time of peace in the late 4th century.[14] Ober has calculated Athenian GDP on an entirely different basis. He divided the Athenian population into three income groups: low, with a subsistence income of 100 drachmas per annum, middling, 2.4 times subsistence and average-elite, 5 times subsistence through which he arrived at a GDP figure of between 5,590–6,660 talents.[15]

A more pertinent measure of the actual prosperity of an ancient economy like Athens is that of real income. Real income expresses the nominal wages of labourers in terms of their capacity to purchase some basic good such as, in our case, wheat. For most ancient and medieval economies, real income expressed as wheat equivalent has been estimated at 4–6 litres per day. In Athens, however, labourers received wages of 8–9 litres during the late 5th century which rose to 13–16 litres per day by the late 4th century.[16] From these figures, wage labourers in classical Athens experienced elevated living standards which, by the end of our period were up to 3 times higher than those of labourers liv-

11 Lo Cascio, Malanima 2009, 392.
12 Morris 2004; 2005.
13 Goldsmith 1987.
14 Bergh, Lyttkens 2011,10.
15 Ober 2010, 16, 27.
16 Scheidel 2010, 455–456. Calculations based on Scheidel's figures.

ing 1000 years later in medieval Europe. It is increasingly argued that Greece in general, and classical Athens in particular, were far wealthier than most ancient historians had previously presumed. Indeed, classical Athens 'appears to have been among the most prosperous communities of premodernity.'[17]

A central contention of this book, in line with a core aspect of New Institutional Economics, is that the quality of a society's institutions is a significant determinant of its economic growth. From the ongoing scholarship in this area a pattern is now emerging in which a causal relationship has been posited between institutional quality and economic growth.[18] An intriguing exercise has been carried out by Bergh and Lyttkens in which the Economic Freedom Index, a measure of the quality of economic institutions, is used to assess institutional quality in classical Athens and rank the outcome against those of modern states.[19] The five metrics which comprise the Index are: size of government, security of property rights, availability of sound money, freedom of international trade, and regulation of credit, labour and commerce.[20] On all five of these metrics classical Athens achieved exceptionally high ratings, with an overall total score of a remarkable 8.9. This placed Athens just behind Hong Kong and Singapore, the two countries which top the Index, and ahead of both Belgium and Britain.[21] This analysis suggests that classical Athens rivalled not only early modern European states in terms of institutional complexity and efficiency, but compares very favourably with those of modern states.

The creation of an institutional framework with formal rules and enforcement procedures is a rational response to reduce transaction costs.[22] In classical Athens there is ample evidence for the existence of such institutions whose objective was to facilitate trade, local and regional. Athenian merchants involved in international trade sought to reduce their risks by financing their trading activities through private loans which were not repayable in the event of the ship and its cargo being lost at sea. To compensate for these higher risks, maritime loans attracted a higher market rate of interest.[23] The fact that higher interest rates attached to riskier loans indicates that a risk reward calculus was integral to investment decisions: a greater appetite for risk brought higher returns. The financing of trade through maritime loans, in which citi-

17 Ober 2011, 8.
18 Heckelman 2000; Dawson 2003.
19 Bergh, Lyttkens 2011.
20 Bergh, Lyttkens 2011, 4.
21 Bergh, Lyttkens 2011, 23.
22 North 1981.
23 Cohen 1992, 53–54.

zens provided capital to fund trading ventures of ship owners, seems to have been a common practice. Concepts of interest rates and profitability are market concepts. Such concepts only have a meaning within a market economy, they would be either anachronistic or redundant in either a reciprocal or redistributive economy. The evidence is compelling that these prices of both goods and money (interest rates) are the outcome of market exchanges.

Undoubtedly, increased international trade would have boosted Athenian economic growth through the operation of comparative advantage whereby goods and services have a greater propensity to be produced where their costs of production are most favourable. As a source of prosperity, international trade was recognised by classical Athenians who adopted a range of policies and institutional mechanisms designed explicitly to foster such trade. Attica did not produce sufficient grain and so classical Athenians purchased it in disparate distant locations where it could be produced more efficiently and sold more cheaply. When transportation costs are high most production tends to be local and small-scale. Through its hegemonic control of the Aegean basin, Athens created a largely integrated and relatively stable economic zone of interrelated markets at the centre of which was the burgeoning commercial centres of Athens and Piraeus. The denial by many ancient historians of an integrated Mediterranean market for one of the most traded commodities in the ancient economy, grain, is primarily based on a misleading comparison with early modern Europe.[24] Trade in early modern Europe involved transport over land, which was inherently expensive—hence its price did not decrease significantly until the advent of the railways during the 19th century. In contrast, inter-regional trade during the classical period, especially in the Aegean basin and its peripheral regions, was by the much cheaper method of sea transport, which would not have been a barrier to the emergence of an integrated Aegean grain market.[25]

Thus, inter-regional trade, by promoting comparative advantage, allowed each region to specialise in what it was best at producing to the benefit of each location. The economic effects of this trade were two-fold: first, farmers in Attica could switch from producing grain relatively inefficiently, to other crops such as grapes and olives, in which they had a long-recognised competitive advantage. Second, it increased labour mobility by freeing considerable numbers of people from the burden of having to grow food who were then available

24 Temin 2013, 30.

25 This is not to argue that prices were uniform across the Aegean; they varied with supply and demand taking account of transport and transaction costs. Prices in different locations were related but not the same.

to switch either location or occupation, or both, and move to Athens and participate in the expanding naval economy: a process which would help explain the increasing urbanisation of Athens and Piraeus. But while trade was a substantial contributor to the prosperity of Athens, in itself, it is insufficient to explain the extent of the growing economic strength of the city-state.

2 Instrumental Behaviour, Self-Interest and Markets

The existence of markets and market exchange has long been accepted by economic historians. Fernand Braudel, the 20th century's foremost economic historian, considered markets to be a universal form of social-economic institution with a long lineage, a position, unfortunately, either denied or downplayed by many in past debates on the ancient economy.[26] Despite the overwhelming evidence for the existence of markets, Finley continued to deny the significance of market exchange in the ancient economy.[27] Even *The Cambridge Economic History of the Greco-Roman World*, which argues for the existence of economic growth in the ancient economy, is lukewarm on the importance of markets, suggesting they 'were fragmented and shallow'.[28] In the same volume, von Reden suggests that there was insufficient demand ('expansion of needs'), and if there was any growth its effects 'on the operation of interdependent market exchange was limited', before concluding that 'in no case can it be shown that it (demand) was regular, widespread, or sustained enough to be supplied effectively by the market without state interference.'[29] But all this just draws attention to the 'dog that didn't bark': if market exchange was not the single most important mechanism for the allocation of resources, goods and services in classical Athens, where is the evidence for alternative allocation mechanisms?

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26 Braudel 1985, 23–35, 224–225. His three volume *Civilization and Capitalism, 15th–18th Century* contains interesting analytical categories of historical markets in which he differentiated a triad of economies; local autarkic economies, market-exchange economies and capitalist market economies—a classification which if adopted by ancient historians might have helped avoid the widespread Polanyi-derived assumption that markets either did not exist or did not play an important role in ancient economies.

27 Finley 1985a, 22. In passing, Finley does refer to Braudel's notion of the climatic unity of the Mediterranean, Finley 1985a, 31, but he makes no reference to Braudel's much more important market classification (see note 26 above).

28 Scheidel et al. 2007, 10.

29 von Reden 2007, 403. Contra Bresson 2016, 109 who states, 'the primary factor in the development of the market was the freedom of peasants and craftsmen to dispose of their surpluses as they saw fit.'

In discussions of the ancient economy the classical authors have been intensely scrutinised. Modern scholarship has subjected Aristotle in particular to considerable literary exegesis while Plato, by comparison, is deemed to be of far less value or relevance to such discussions and is largely ignored.[30] Finley espouses this viewpoint, which is one, as he says, that transcends the oikos divide: 'The key for antiquity rests not with Xenophon or Plato but with Aristotle. It is agreed by all sides that only Aristotle offered the rudiments of analysis'.[31] In his rejection of the notion that the ancient economy was characterised by what he termed an 'extreme division of labour',[32] Finley is firmly dismissive of Xenophon's *Cyropaedia*, which, he suggests, may be an important source for ancient economic history, but not for 'the division of labour for which it is so often cited.'[33] His reasons are twofold. First, 'Xenophon is interested in specialization of crafts rather than in division of labour' and second, the benefits of specialization only give rise to an 'improvement of quality, not [an] increase in productivity'. He therefore concludes that 'Xenophon's remarks do not merit the accolades they have received.'[34] Having satisfied himself 'that only Aristotle offered the rudiments of analysis', Finley dismisses both Xenophon and Plato from any serious consideration.[35] As will be argued below, Finley's disregard of Plato in these respects is unwarranted.

In this rush to literary judgement, important aspects of Book 2 of Plato's *Republic* have failed to attract the attention of ancient scholarship that they

30 Finley 1970; Meikle 1979, 1995.

31 Finley 1970, 4.

32 Finley 1985a, 34. The concept of the division of labour is an axiomatic aspect of economic thought, given famous expression in Adam Smith's pin-factory explanation. It is foundational to core economic concepts such as productivity, economic surplus and, through comparative advantage, market exchange. As a consequence, it was a particular target of primitivist's efforts to refute suggestions that it formed part of ancient Greek analytical thinking.

33 Finley 1974, 27. It is noteworthy that in formulating his views, Finley relies exclusively on Xenophon *Cyr.* 8.2.5 and does not refer to Plato *Republic* 370a–c at all.

34 Finley 1974, 27. Finley's views were echoed, almost verbatim, by subsequent influential primitivist scholars. Austin and Vidal-Naquet 1977, 15, state, 'In many Greek writers there are ideas which may superficially recall the modern theory of the division of labour … they have nothing to do with the division of labour in the modern sense, i.e. they are concerned not with an increase in production, but with an improvement in the quality of the goods produced through greater specialization.' Similarly, Vernant 1983, 259.

35 Roll 1954 3rd ed., 27–28; Schumpeter 1983, 57. For his repudiation of Plato's relevance to economic analysis Finley relied on Roll, and especially Schumpeter: '"The essential difference" between Plato and Aristotle in this respect', writes Schumpeter, 'is that an analytic intention, which may be said (in a sense) to have been absent from Plato's mind, was the prime mover of Aristotle's.'

deserve. Though economic related ideas permeate the dialogue throughout, it is the section in Book 2 on the division of labour that is of particular interest. In passing, it is worth noting that while opinion within classical scholarship may be divided, Plato's analysis of the division of labour is regarded far more favourably within the history of economic thought.[36] Indeed, many such historians see Plato as an early proponent of the division of labour and therefore a precursor of Adam Smith, 'primarily on account of arguments advanced in his *Republic*'.[37]

As part of this dialogue Plato gives an idea of the extensive range of goods and services which were provided through market exchange in Athens: 'And the requirements we first mentioned, houses and garments and shoes will no longer be confined to necessities, but we must set painting to work and embroidery, and procure gold and ivory and similar adornments, must we not? … the entire class of huntsmen … poets and their assistants, rhapsodists, actors, chorus-dancers, contractors—and the manufacturers of all kinds of articles, especially those that have to do with women's adornment … Don't you think that we shall need tutors, nurses wet and dry, beauty-shop ladies, barbers and yet again cooks and chefs? And we shall have need, further, of swineherds … and we shall also require other cattle in great numbers if they are to be eaten, shall we not?' (Plato, *Republic* 2.372b–373d). Such goods and services, which were clearly well beyond the requirements for daily survival, were widely available not just to a wealthy elite but to large numbers of Athenian citizens, including craftsmen, with wages well above subsistence and whose 'elevated levels of real incomes merit especial attention'.[38]

Plato recognised that individuals were not self-sufficient and therefore depended on others to provide the goods and services necessary to satisfy their material needs. He first rejects individual self-sufficiency in favour of communalism, which in turn is summarily dismissed in favour of market exchange.[39] For Plato market exchange arises from a process made feasible by the specialisation of labour, in which 'more goods are produced, and better quality and more easily when one man performs one task according to his nature' (*Rep.* 2.370c). Though describing his ideal city Plato is, in all likelihood, reflecting the realities of contemporary Athens when he posits market exchange, buying

36 Medema, Samuels (eds.) 1998, 12–16. The comment is by L. Robbins from his LSE lecture series.

37 Silvermintz 2010, 747; Schumpeter 1954, 56; Foley 1974 220–242.

38 Scheidel 2010, 442.

39 Weinstein 2009, 445 points out that Plato offers no explanation for this dramatic switch to market exchange.

and selling (πωλοῦντες καὶ ὠνούμενοι, 2.371b), as the institutional mechanism through which individuals acquired the products and services they needed.[40] For Plato human beings have different abilities that predestine them for different tasks in a well-ordered state and he therefore reasons that specialisation is founded on natural inequality: 'everybody has one best function'.[41] What is at play here is the need for individuals to come together in a political association, the polis, as a better way satisfying their self-interested needs for the goods and services produced by others. The political structures of the polis arise to facilitate citizens exchanging their surpluses through the market. (*Rep.* 2.370a–c). Plato also identifies the other essential elements that make market exchange possible: a marketplace, coinage and the agents who act as intermediaries in the agora, retailers (κάπηλοι) (2.371b–e).

One of the most extensive scholarly treatments of this passage is Schofield's 'Plato on the Economy', where he says, 'Plato's model of the economy *is* a brilliant piece of theory' (emphasis in original), and one in which 'Plato makes it clear that the Republic's "first city" is a normative construction.' Furthermore, he contends that the passage provides evidence for 'the invention of the concept of an economy' because, by focusing on the dynamic of specialisation of skills, Plato explains 'the development and expansion of a whole range of economic activities, culminating in the creation of the market.' Yet, despite its brilliance in highlighting the centrality of the division of labour in the analysis of the economy,[42] this passage of Plato remains 'unremarked by the mass of commentators'.[43] This, of course, is completely at variance with the whole thrust of Finley's arguments in which he abjures any semblance of economic analysis in the writings of ancient authors.[44]

40 Bresson 2016, 107,187–189; Harris 2002, 71–72. Isager and Hansen 1975, 50, who argue that Plato, while indulging in philosophical speculation, is also doing so based on the experience both historical and contemporary Athens: 'The presentation is on an abstract level, but undoubtedly refers to Athenian history from the earliest times to Plato's own day.'

41 Lowry 1987, 86–93.

42 Schofield 1999, 76, considers specialisation of skills and the division of labour to be one and the same: 'If specialisation of crafts is introduced partly for reasons of efficiency, it is by no means clear that it can be sharply differentiated from the idea—I take it the fundamentally utilitarian idea—of the division of labour.'

43 Schofield 1999, 80,73–76. Greco 2009, 53 argues that Finley and Vidal-Naquet are correct and that 'the distinctively modern idea of economic productive efficiency is not to be found in Plato.' See also Alvey 2011, 835–836 on the question of Plato's specialisation of labour.

44 Finley 1970, 3–4, who claims such ancient economic references do not constitute analysis as they are mere observations or descriptions of economic activities.

Far from a preoccupation with crafts, throughout this passage, Plato mentions a disparate range of economic agents including: farmers, herdsmen, builders, weavers, cobblers, shopkeepers and wage-earners, importers, exporters and sailors. Plato makes it abundantly clear that what is being produced and traded is not limited to luxury goods or craft products, but those basic requirements of food, housing and clothing needed 'to sustain life' (*Rep*. 2.369d). Furthermore, Plato specifically instances, as the quote above makes clear (2.370c), that increased specialisation results not only in improved quality but increased quantities as well. Even more interestingly, Plato's detailed and inclusive interpretation of the output of the political economy of his ideal city encompassed the output of both producers of goods (δημιουργοί) and providers of services (διάκονοι). As the above brief discussion of this important aspect of Plato illustrates, there was analysis of the economy in classical Athens and an acceptance that economic activity constituted a separate sphere.[45]

Even more significantly, in Plato's new city the question arises as to how the citizens would share the products of their labour, which, as Socrates indicates, 'is after all the very purpose we made a community and created a state' (ὧν δὴ ἕνεκα καὶ κοινωνίαν ποιησάμενοι πόλιν ᾠκίσαμεν). The answer is an obvious 'by buying and selling' (πωλοῦντες καὶ ὠνούμενοι), from which follows a logical corollary: 'so we shall have a marketplace, and coinage as a token of exchange resulting from this?' (ἀγορὰ δὴ ἡμῖν καὶ νόμισμα σύμβολον τῆς ἀλλαγῆς ἕνεκα γενήσεται ἐκ τούτου; *Rep*. 2.371b). Thus, Plato's Socrates concludes that the need to facilitate the necessary and quintessentially economic activities of production, exchange and distribution required the creation of the political structures of the polis.

Plato suggests that the satisfaction of material needs through the market existed *prior* to the establishment of the polis and is in fact its raison d'être.[46] Finley, influenced no doubt by the Marxist base/superstructure nexus, also adopts this position, saying that specialisation and increases in material resources were necessary conditions for the emergence of 'the highest form of social organisation, the polis.'[47] In Harris' important analysis of this aspect of Plato, he also notes the integral connection between the satisfaction of material needs through market exchange (economic) and the formation of the polis

45 This is 'economic' in the modern sense of the word, not οἰκονομία (household management).

46 Schofield 1993, 73, disputes this interpretation saying the passage 'does not indicate any *a priori* historical reconstruction or genetic analysis of the origins of civilization or the state.'

47 Finley 1970, 20.

(political): 'To provide him with all that he lacks, each person joins with others to form a community called the polis, where one man exchanges with another to make his life better.'[48] The logic of Plato's argument is that he considered the economy as having a separate (and prior) existence and therefore he did not consider it to be embedded. In the light of this, one important commentary has argued that Plato's city 'is clearly one of which the members are moved by considerations of self-interest; in fact Plato is offering a basic account of what has since been called Economic Man'.[49] Though Plato clearly approves of and seeks efficiency and growth within the political economy of his ideal city-state, it must also be recognised that his economic analysis is firmly situated within an overall framework of achieving moral and ethical objectives: the necessary conditions for happiness or the good life (εὐδαιμονία). In line with the spirit of Plato's economic analysis, the conclusion of this part of the discussion is that the flourishing of either a modern or ancient political economy involves institutionally symbiotic relationships encompassing the political, economic and legal spheres, through which citizens are free to pursue their economic interests in an ordered society operating under the rule of law.[50]

As has been argued, Athens depended for its survival on the widespread acquisition of certain commodities through the market.[51] While the polis played a major role in promoting market exchange in Athens, markets were an independent institutional feature. For instance, price fixing, except on rare occasions of acute grain shortages, was not a regular feature of the Athenian political economy and, even if it were, it would not in itself deprive it of being designated a market economy. The EU fixed agricultural prices for decades, creating beef, butter and cheese mountains as well as wine, milk and olive oil lakes, and no one would suggest it was not a market economy. All the indications, from the appointment of coin-checkers, weights and measures stan-

48 Harris 2002, 72. Harris discusses the 'nature of technical specialisation and its relationship to the rise of market exchange' and highlights the existence of both vertical and horizontal specialisation; see especially pp. 68–72. In Harris et al. 2016, 24–25 this extensive specialisation was a consequence of high levels of aggregate demand.

49 Cross and Woozley 1971, 80.

50 Harris 2002, 73.

51 Holladay 1997, 2001. The difficulties ancient history has had with this is articulated by Holladay, 'we as historians, philologians, and archaeologists, we have simply all been locked into Karl Polanyi's deceptively simple notion that, somehow, the ancient world operated under an entirely different set of economic rules than the modern: in two words, "marketless trade".' The primitivist acceptance of extensive international trade in commodities while simultaneously denying a significant role for market-exchange and failing to offer evidence for any alternative institutional exchange structures has some considerable difficulties, both evidentially and in logic.

dardisation, the appointment of market-overseers, and the creation of special commercial courts, point to the fact that Athens did not attempt to control the market, it sought to facilitate its functioning more effectively.[52] The lengths to which Athens sought to protect the commercial integrity of its markets and the extent to which it recognised that market exchange fundamentally depended on consumer trust can be seen from Aristotle's description of the function of the *agoranomoi*: 'to these the laws assign the superintendence of all merchandise, to prevent the sale of adulterated and spurious articles … also controllers of measures (*metronomoi*) … who supervise all measures and weights, in order that sellers may use just ones.' (Arist. *Ath. Pol.*51.1–2). The constant recourse to the assumption of 'embeddedness' in scholarly debates represents a failure to come to terms with the implications of the significance of market exchange in classical Athens and has proven to be a considerable impediment to a more comprehensive understanding of the history of its political economy.

Approaches to the political economy of classical Athens which pose the question of its nature solely in terms of a bipolar market economy or non-market economy have not been helpful. Nor have matters been advanced by the efforts of both sides of the argument to elicit evidence through comparisons with modern industrial economies. All societies, ancient and modern, have elements of reciprocity, redistribution and market exchange in how their economies functioned. Even in a modern market economy, not all transactions consist of market exchanges. It is not the universality of market exchanges that defines a market economy but rather their prominence and importance for the economy as a whole.[53] In Polanyi's taxonomy of transactional exchange, reciprocity, redistribution, and market exchange each category corresponds to one of three types of behaviour of customary, command and instrumental.[54] Reciprocal exchanges are governed by tradition and social obligations which can be formal or informal in nature and tend to change slowly. Redistribution's essential characteristic is that goods are collected centrally, and their subsequent

52 For coins-checkers see Engen 2005, 359–381; for the Coinage Decree see Lewis 2008, 118–131, one of the most controversial documents in Greek epigraphy; Fantasia 2012, 31–56, contains a detailed description and analysis of Athenian market overseers and their functions; Ober 2008, 271. The establishment of a rules-based institutional framework of the commercial maritime courts a conscious effort to provide legal predictability and enhance commercial confidence in Athenian markets and provide a speedy resolution to commercial disputes to further attract foreign merchants. See Cohen 1973 for a detailed treatment of these trade-enhancing institutions.

53 Temin 2001, 180.

54 Polanyi 1977, 35–36.

distribution is achieved 'by virtue of custom, law or ad hoc central decision'.[55] Finally, exchange is the standard economic transaction through which people voluntarily exchange goods for other goods or money.[56] In instrumental behaviour,[57] the one with which we are most concerned, individuals have particular objectives and pursue specific actions that advance the achievement of these economic objectives.[58] In a market economy people behave instrumentally most of the time. Thus, based on these two features, monetisation and instrumental behaviour, we have an empirically verifiable basis to help us ascertain if classical Athens had a market economy.

The modern tendency to deprecate the role of self-interest in human affairs is not one that was shared by classical Athenians. Athenians acknowledged and embraced the notion of self-interest and sought to harness it for collective political purposes. The pursuit of self-interest lay at the heart of Athenian democracy whose abiding principles of freedom and equality guaranteed the legitimate quest for individual self-interest within the bounds of the overall good of the polis as defined by the law (Thuc. 2.27.2–3).[59] This pragmatic acknowledgement of self-interest can be seen in a range of literary sources where it is widely referred to and openly discussed, a fact which 'attests to the primacy of self-interest in Athenian understandings of human motivation and behaviour.'[60]

For Plato a basic trait of human nature was 'the desire to outdo others and get more and more' (*Rep.* 2.359c),[61] while for Aristotle 'all men, or most men, wish what is noble but choose what is profitable' (Arist. *Nic. Eth.* 1162b20). Even democracy itself was considered by the Old Oligarch to be a self-interested enterprise designed to favour the majority of Athenians: 'I can forgive the common people their democracy; for anyone can be forgiven for looking after their own interests'. (Ps. Xen. *Ath. Pol.* 2.20). This behavioural pattern extended even to the law courts where 'they put their own self-interest before justice.' (Ps. Xen. *Ath. Pol.* 1.13). According to Thucydides, the advent and success of the Athenian

55 Polanyi 1977, 40.
56 Temin 2001, 170; 2006, 137.
57 In an economic context, instrumental behaviour is defined as any action that is taken with the objective of satisfying a motive—premeditated behaviour intended to achieve a goal.
58 Temin 2001, 171.
59 A similar sentiment is expressed by Herodotus; following liberation from tyranny 'each (citizen) was zealous to succeed for his own self.' (Hdt. 5.78).
60 Christ 2006, 15.
61 This desire for wealth was a problem for Plato 'Money has the power to produce in them a million cravings that are impossible to satisfy—all centring on the endless acquisition of wealth' (Laws. 870a).

empire was the result of 'three of the strongest motives, fear, honour and interest.' (Thuc. 1.76.2). For Thucydides, the desire to increase material well-being was a fundamental part of human nature and the central driving force behind Athenian imperialist ambitions as the instrumental means of acquiring greater collective and individual wealth.[62] From historians to philosophers, tragedians and orators all confirm that among Athenians, the pursuit of self-interest was considered to be ubiquitous and an innate aspect of human nature.

While embracing self-interest, the pathology of selfishness was frowned upon and considered inimical to the welfare of the polis. The greed and selfishness of politicians in advancing their own interests was seen as posing a considerable threat to the communal interests of the polis: of particular concern were 'private ambitions and private interests ... whose success would only conduce to the honour and advantage of private persons, and whose failure entailed certain disaster on the country in the war' (Thuc. 2.65.7). The Sicilian expedition is one of the most celebrated instances where overweening ambition and collective greed resulted in a catastrophic naval disaster with grave political and economic consequences for Athens. Losing sight of its prudential interests, the Assembly voted for the expedition because of a demotic desire 'to earn wages ... and make conquests that would supply a never-ending fund to pay for the future.' (Thuc. 6.24.3).

3 The Athenian Labour Market

The nature of the labour market reflects the underlying structure of the economy. A functioning labour market which matches the supply and demand for labour permits workers to respond to changing economic circumstances by either changing jobs or moving location. The traditional argument against the presence of a functioning labour market in classical Athens has been the existence of slaves. For the primitivists, classical Athens was a slave society which had no functioning labour market and therefore was incapable of having a market economy. Finley, for example, claimed that 'Ancient slavery ... co-existed with other forms of dependent labor, (but) not with free wage-labor.'[63] Likewise Polanyi insisted that a labour market proper did not exist prior to the Industrial Revolution.[64] For Hopkins, 'Slaves were ... a means of organizing labour in

62 Balot 2001, 159–163.
63 Finley 1980, 68, 127.
64 Polanyi, 1944, 135.

an economy without a labour market.'[65] This was a view echoed by Finley: 'In early societies, free hired labour (though widely documented) was spasmodic, casual, and marginal.'[66] As with much else in the ancient economy the task of establishing the existence of a functioning labour market is made much more difficult by the absence of comprehensive evidence. However, the mere presence of slaves is not, as the primitivists assert, adequate in itself to deny the existence of a labour market and hence a market economy.

Slavery in classical Athens was significantly different from that of modern slavery and its presence, according to Temin speaking about the early Roman Empire, was 'not a barrier to economic progress.'[67] We need to establish a more orthodox set of criteria to test for the presence or absence of a functioning labour market than an ideologically dictated one of slavery. As posed by Temin for the Roman economy the essential question 'is not how many slaves were present, however, but rather how slavery operated'.[68] The fact that there were slaves does not preclude the possibility that free hired labour was the norm in most sectors of the economy of classical Athens. In any case, as we shall see, many slaves participated actively in the Athenian labour market, albeit at a less advantageous position than free labour.

In classical Athens slaves were an integral part of a functioning labour market. There is comprehensive evidence for slaves working side-by-side with free labour in large employment sectors of the economy such as the domestic, agricultural, and construction sectors. As well as participating actively in the labour market, slaves could also progress on merit and improve their economic conditions. Many slaves were active entrepreneurs in their own right, and payed a percentage of the profits they made to their owners—one even became a wealthy banker.[69] For those slaves who succeeded economically, it was also possible for them to purchase their freedom. Indeed, to us moderns a peculiar aspect of Athenian slavery was that slaves could also be slave-owners. The promise of manumission was a considerable incentive for Athenian slaves to perform well and, in effect, respond positively to market incentives.

That slaves played an important role in both Athenian society and its economy has been cited extensively as evidence that the political economy of Athens was primitive. In fact, a more nuanced economic analysis reveals a fundamentally different picture. Infrastructure projects such as the building of the

65 Hopkins 1978, 109.
66 Finley 1980, 68.
67 Temin 2013, 115.
68 Temin 2004, 516.
69 Cohen 1992, 61–67.

Erechtheion provide revealing insights into the division of labour within the workforce and, more importantly, valuable evidence for instrumental behaviour on the part of slave owners. The Erechtheion on the Acropolis was completed during the last decade of the 5th century (406), following a pause in construction due to the Sicilian expedition (415–412). Its workforce comprised members of the three official categories of Athenians: citizens, metics, and slaves.[70] Of the 86 workers whose civic status and trades can be identified, 24 (28%) were citizens, 42 (49%) were metics, and 20 (23%) were slaves.[71] The largest single craft trade was that of mason at 37 (43%), of whom the largest group were slaves at 16, followed by 12 metics, and 9 citizens. The Parthenon workforce had a similar mixture of citizens, metics and slaves among its craftsman workforce and were paid a not dissimilar wage rate of one and a half to two drachmae per day.[72] Somewhat surprisingly, according to the Erechtheion accounts, there were no slaves amongst the unskilled labour force, where metics had a virtual monopoly. This is even more striking when one considers that the very considerable naval losses, principally thetes, suffered in the Sicilian campaign would have created a labour shortage in that precise part of the labour market where slaves would have been a ready substitute.

The virtual absence of unskilled citizen labourers can easily be put down to political and ideological factors, but the absence of unskilled slaves seems incongruous at first.[73] However, their absence may be explained by the rational economic behaviour on the part of slave owners. The Erechtheion building project was a relatively short-term one while the purchase of a slave was de facto a long-term investment. Once the building project was finished the slave-owner's options were either to sell the slave at a time when other slave owners were acting similarly, and thereby faced a loss on his investment, or keep the slave and bear the cost of providing for him until a new building project materialised. Either way, the risk of possible financial loss to the slave owner outweighed the potential profit from hiring slave labour to a short-term building project—the slave owner was acting instrumentally. Interestingly, from the perspective of labour market economics, under these circumstances a slave in classical Athens was inherently less flexible as compared with free labour which could be fired when a project finished. Paradoxically, this is a trait shared by classical Athenian slaves with some entrenched modern workforces with

70 Randall 1953, 199.

71 Randall 1953, 199. All figures taken from Table 1, Breakdown of Trades by Civic Status.

72 Burford 1963, 34.

73 Epstein 2008, 108.

high levels of social protection—in both instances the economic outcome is similar; less employment, particularly for short-term projects.[74]

On the other hand, the Erechtheion accounts also show that slaves were extensively employed in its construction but as skilled craftsmen: of the 20 slaves employed in total, all worked as either masons (16) or carpenters (4). Two craft trades, mason and carpenter, thus account for 63 (73%) of the 86 workers whose status and occupation are known and between them they employed 100% of the slave labour utilised. While accepting that the Erechtheion was a particularly elaborate and expensive building, given the nature of Athenian monumental and domestic buildings in general, in which stone and timber were by far the most extensively used materials, it is likely that a significant proportion of those employed in such work elsewhere were from these two craft trades. This is likely to be the case for other monumental buildings, and in particular for the enormous infrastructure projects associated with naval defence strategy: Athenian circuit walls, the Long Walls, dockyards, shipsheds and the Piraeus fortification walls. Additionally, as the employment pattern in the Erechtheion indicates, a significant proportion of the craft workers employed in such projects were also likely to have been slaves.

Further analysis of the Erechtheion accounts shows that these and related employment trends are again explained by the instrumental behaviour of slave owners. The seven identifiable slave owners, both citizen and metic, worked as craftsmen themselves on the project and all their slaves worked at the same trade as that of their master. Half of the craftsmen-slaves (10) were owned by just three freedmen: five slaves by two citizens and a further five slaves by Simias, a metic mason.[75] It makes rational economic sense for a craftsman to own a slave and train him in the requisite skills and proficiencies so that he can be hired at the same wage rate as the craftsman slave owner. As a further reflection of the working out of the effects of the instrumental behaviour on the part of these slave-owning craftsmen, it is unsurprising to learn that these three instances of multiple slave ownership (10 in total) all involve masons—the single biggest craft in the Erechtheion (43%). As the craftsmen for whom classical Athens would have had the greatest demand, it is no coincidence that it was masons who had the financial resources to be in the business of purchasing and sub-contracting multiple craftsmen-slaves.[76]

A functioning labour market requires that the following two conditions need to be at least partially fulfilled: that labour is free to migrate or change employ-

74 Epstein 2008, 108.
75 Randall 1953, 202. Table 2, Slave Owners and Slaves.
76 Randall 1953, 203–204.

ment in response to economic stimuli and that their rate of pay is commensurate with their labour productivity.[77] Because a functioning labour market is an essential requirement for a market economy, absent these conditions and no market economy exists. In all labour markets wage levels vary according to the skills, the human capital, that different types of labour possess, and their relative scarcity. As the Erechtheion accounts confirm, it was not their legal status as slaves that mattered in setting the pay rates for the slave masons, it was their skill level which determined it. Agricultural labourers traditionally have low skill levels and so attract low levels of pay and remuneration. Agricultural wage levels also tend to be uniform across a region or territory as few technical advances occurred in the ancient agricultural sector to enhance profitability. In these circumstances, agricultural labour was not very mobile as labourers had little economic incentive to move location. But in Attica from at least the 5th century onwards one form of mobility was availed of increasing by rural dwellers, migration to the city of Athens. The attraction of gainful employment in the expanding naval economy of Athens-Piraeus was likely to have been a significant factor in accounting for the unprecedented levels of Athenian urbanisation.

4 The Naval Economy

What lay behind Athenian economic growth was the comparative advantage it had established for itself in the realm of naval conquest. This was reflected in the reallocation of labour away from agriculture and into the burgeoning urban naval economy. The underlying structure of the Athenian political economy underwent a significant transformation. This shift from an agricultural sector characterised by low and static productivity to that of services would have been a net contributor to overall productivity. Simultaneously, there was an inordinate increase in the allocation of capital investment to naval defence. Despite the increase in the numbers employed, the unprecedented size of this capital investment would have given rise to increases in both average and marginal labour productivity as the ratio of capital to labour increased. This structural change also meant a more efficient allocation of labour within the Athenian economy as it involved a move from a high fixed-cost agricultural sector to one where variable costs dominated.

77 Temin 2004, 515.

The agricultural sector of Attica was dominated by family farms whose members, including slaves, had to receive maintenance commensurate with at least a basic subsistence, regardless of the output level. The new naval economy, however, was characterised by a labour force consisting of citizens, metics, slaves, and mercenaries all of whom were paid daily and, therefore, constituted variable costs which could be increased or decreased as circumstances, and the market, dictated. The episodic nature of naval labour requirements indicates that there was considerable mobility of labour within both Athens and Attica. When the occasion demanded, large numbers of sailors, it seems, could be drawn quickly from agriculture and other sectors where underemployment must have been prevalent. Given these circumstances, it seems inconceivable that for periods of 6 to 9 months at a time anything from 6,000 to 10,000 labourers could be reallocated to the naval economy as rowers from other employments without significant repercussions for the productivity of these other sectors. Though income and productivity boosting part-time engagement in both the naval economy and agriculture would have been both rational and likely.

In recent decades, Hansen has become the preeminent authority on Athenian demography. With a particular focus on the 4th century, he has extended the discussion beyond mere size to include age structure.[78] For Hansen the importance of demography in ancient history is paramount: 'To understand the nature of Athenian democracy or *the nature of the Athenian economy* (emphasis added) we must have at least a rough idea of the population of Athens.'[79] As with Patterson,[80] Osborne, and Hopkins, Hansen rejects as unsuitable comparisons with modern populations and instead uses the Coale-Demeny model life tables to derive the age structure of the Athenian population.[81] To arrive at population estimates for the 5th century he effectively reverse engineers the more reliable 4th century data.[82]

Such has been the concentration by Hansen on Athenian demography that many now consider the issue of the size of the city-state's population to be settled.[83] Hansen has estimated that the total adult male population of Athens, for much of the 5th century up to and including 431, stood at 60,000 but dropped

78 Hansen 2006b.
79 Hansen 2006b, 20.
80 Patterson 1981, Osborne 1985, Hopkins 1966.
81 Coale, Demeny 1966 revised 1983.
82 Hansen 1988.
83 Akrigg 2011, 41.

to 25,000 by 400 and was at 30,000 from 350 to 322.[84] If, based on the Coale-Demeny model life tables,[85] we reduce these figures by 12 % for the males aged over 49 years, then we arrive at trireme-fit manpower totals of 52,800, 22,000, and 26,400 for each of the three periods. But these are the figures for all male citizens of military age, including the wealthy elite, and hoplites. Assuming that thetes constituted 60 % of the Athenian population we get a final maximum number of thetes rowers potentially available to crew trireme expeditions during the three periods under consideration as follows; 31,680, 13,200 and 15,840. These figures, of course, take no account of thetes who were unavailable for a variety of legitimate reasons: invalids, travellers, and illness, for instance. Most importantly, the figures assume that all these thetes had no other occupations or could abandon their employment for periods of up to 9 months at a time—a highly unlikely assumption. Based on these figures, it is evident that the navy had to rely on rowers other than citizen-thetes to man the fleet.

Throughout the 4th century as manpower shortages bedevilled naval recruitment it was no longer necessary for the rowers of triremes to be Athenian citizens, they could be slaves, metics or mercenaries.[86] According to Aristotle, the only group that needed to be composed exclusively of citizens were the marines, because 'they are the ones in charge and control the crew' (Arist. *Pol.* 1327b8–11). The exigencies of war and the resultant escalating demand for rowing crews soon came up against the limitations of citizen numbers in the age cohort capable of withstanding the physical rigours of trireme rowing. In these circumstances, the provenance of the rowers was not important, but the level of their skills and fitness certainly was. According to Aeschines (2.133) in 346 a fleet was mobilised which comprised citizens up to the age of 40. On a similar basis, a fleet was manned in 353/2 by citizens up to the age of 45 (Diod. 3.4; Xen. *Anab.* 6.5.4). The reason for these upper age limits was likely to have been the physical endurance and fitness levels required of rowers in executing trireme battle manoeuvres. Older citizens were also likely to have been required for serve as a type of home-guard manning the extensive network of fortification walls including the circuit walls of both Athens and Piraeus, as well as the Long Walls and the Phaleric wall (Thuc. 2.13.7; Xen. *Anab.* 6.5.4).

There is much source evidence that Athens employed considerable numbers of mercenaries as rowers in the fleet during the Peloponnesian war: 'In those days, when they manned their triremes, they put on board crews of foreigners

84 Hansen 1988, 28.
85 Akrigg 2011, 54.
86 van Wees 2004, 211.

and slaves.' (Isoc. 8 48, 79; Thuc. 7.57.10, 4.129.2). In preparation for the commencement of the Peloponnesian War, the Corinthians proposed to finance it through borrowings from Olympia and Delphi and then use the money 'to seduce their foreign sailors by the offer of higher pay. For the power of Athens is more mercenary than national.' (Thuc. 1.121.3). Metics were also used extensively on Athenian triremes in conjunction with citizens: 'and next we resolve that the fleet shall be manned by resident aliens and freedmen' (Dem. 4 36).

The evidence for the presence of slaves as rowers on Athenian triremes in the source literature has been fertile ground for academic debate. A majority view, if not quite a consensus, has emerged that slaves were part of the rowing crew especially in times of large naval expeditions and/or general manpower shortages.[87] Positive evidence for the use of slaves in trireme crews can be found in an inscription relating to the naval battle of Arginousae (*IG* 1^3 1032), which divides trireme rowers into three categories: citizens sailors (ναῦται), foreigners (ξένοι), and slaves (θεράποντες).[88] In 406, shortly before the battle of Arginusae, the Athenians mobilised an expedition to rescue Conon who had been blockaded by the Spartan navy east of Lesbos and so 'they voted to go to the rescue with one hundred and ten ships, putting aboard all who were of military age, whether slave or free.' (Xen. *Hell.* 1.6.24).

At critical junctures throughout the 4th century Athens experienced acute naval manpower shortages. Following the peace of 375 in which Athenian naval supremacy was given de facto recognition by Sparta, fleet operations returned to a peacetime level in which 'the supply of rowing labour will have matched demand.'[89] As Cawkwell points out, with the drop in demand for trireme crews, the naval unemployed would have departed the Piraeus rather than hang around for the next unforeseen naval emergency to happen.[90] Two years later when one did occur, naval demand outstripped the diminished labour supply and Timotheus was unable to find sufficient rowers in the Piraeus to man his expeditionary force of 60 triremes (Xen. *Hell.* 6.2.11).

As a military force the Athenian navy operated on an entirely different basis from that of modern military organisations: there was no permanent standing force. Commanders, marines and rowers were drawn from the available Athenian labour pool and recruited on an as-required basis. Sailors were paid

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87 Graham 1992, 257–270; 1998, 128; Morrison et al. 2000, 117.

88 Hunt 1998, 2. According to Hunt 'this single useful piece of epigraphic evidence on the subject suggests that the navy upon which Athens' power rested may have contained about as many slaves as Athenian citizens.'

89 Cawkwell 1984, 335.

90 Cawkwell 1984, 335.

a daily wage as well as an allowance to purchase food in local markets while on mission. This combination of competitive pay rates, determined at the margin by the necessity to pay mobile mercenaries the going rate, as well as a food allowance indicates an organisation whose payment and provisioning was delivered through market transactions. The salient features of recognised pay rates, combined with a naval force consisting of thetes citizens, metics, mercenaries, and slaves confirms that the navy was a structurally integral part of the Athenian labour force.

A valuable insight into the operations of the naval economy can be gleaned from events during the late 360s. It was a time of grain shortages across the Aegean, causing prices to rise in Athens. In order to avert a food crisis, a decree was passed by the Assembly to send an expedition to protect the grain merchants and ship-owners at Pontus whose cargoes were being commandeered. Even allowing for rhetorical intent and polemical exaggeration, the speech of Apollodoros, one of the trierarchs of the expedition, provides a detailed and revealing description of his preparations:

> when the sailors listed by the demesmen did not appear, save a very few, and these incompetent, I dismissed them; having mortgaged my property and borrowed money, I was the first to man my ship, hiring the best sailors possible by giving to each man large bonuses and advance payments. More than that, I furnished the ship with equipment wholly my own, taking nothing from the public stores, and I made everything as beautiful and magnificent as possible, outdoing all the other trierarchs. As for rowers, I hired the best that could be had.
>
> DEM. 50.7
>
> ἐγὼ δ᾽ ἐπειδή μοι οὐκ ἦλθον οἱ ναῦται οἱ καταλεγέντες ὑπὸ τῶν δημοτῶν, ἀλλ᾽ ἢ ὀλίγοι καὶ οὗτοι ἀδύνατοι, τούτους μὲν ἀφῆκα, ὑποθεὶς δὲ τὴν οὐσίαν τὴν ἐμαυτοῦ καὶ δανεισάμενος ἀργύριον πρῶτος ἐπληρωσάμην τὴν ναῦν, μισθωσάμενος ναύτας ὡς οἷόν τ᾽ ἦν ἀρίστους, δωρεὰς καὶ προδόσεις δοὺς ἑκάστῳ αὐτῶν μεγάλας. ἔτι δὲ σκεύεσιν ἰδίοις τὴν ναῦν ἅπασι κατεσκεύασα, καὶ τῶν δημοσίων ἔλαβον οὐδέν, καὶ κόσμῳ ὡς οἷόν τ᾽ ἦν κάλλιστα καὶ διαπρεπέστατα τῶν τριηράρχων. ὑπηρεσίαν τοίνυν ἣν ἐδυνάμην κρατίστην ἐμισθωσάμην.

A number of aspects of this passage are germane to our quest for evidence of functioning markets in Athens. First, the raison d'être for the expedition was to protect vital Black Sea grain shipments from enemy predations at a time when a shortage of supply in Athens was causing grain prices to rise. This is clear evidence of both an Aegean-wide grain market and the operation of the

law of supply and demand. Second, at times of severe crisis even the mechanism of conscription failed to deliver sailors in either sufficient quantity or of an acceptable quality, and so Apollodoros hired mercenaries on the open market. Third, there was a functioning credit market in which Apollodoros could mortgage his property at relatively short notice to raise what was presumably a significant (though unspecified) amount of cash. Fourth, he provided significant inducements by way of bonus payments and cash advances to attract the most experienced crew for his trireme—incontrovertible evidence that naval labour was mobile and free to take up employment where the rates of pay were best. Later on in the Hellespont, Apollodoros' trireme suffered high rates of desertion from among his highly skilled crew, because 'trusting in their skill as able rowers, (they) went off wherever they were likely to be re-employed at the highest wages.' Finally, it is clear that there were private suppliers of ships' gear in Piraeus, as Apollodoros could equip his trireme with gear purchased on the open market rather than acquiring it from the more usual source of the public stores.

The inauguration of pay for sailors had significant knock-on effects in boosting overall economic activity, but it also set an important precedent. The advent of payment to sailors for military service carried out on behalf of the state 'must have facilitated the introduction of pay for political service.'[91] The introduction of payment for attendance at political meetings such as the 500-member Council was a major factor in expanding Athenian democracy by facilitating the active participation of the lowest social class, the thetes. Thus, the creation of a substantially large state-owned fleet of dedicated warships with its attendant employment opportunities and financial benefits, combined with the later introduction of pay for political attendance, fundamentally transformed the political, financial and economic status of the thetes. This sequence of events is evidence from classical Athens of an association between economic performance and the development of democratic political institutions as postulated by Acemoglu and Robinson for modern states.[92]

The introduction of pay for jury service by Pericles during the 450s (Aristot. *Pol.* 2.1274a5–9, *Ath. Pol.* 27.2) may also have had unintended consequences for the availability of naval manpower. There was a standing panel of 6,000 jurors (δικασταί) which was chosen by lot every year, each of whom was initially paid at the rate of 2 obols per day, but increased by 50% to 3 obols by Cleon around

91 Raaflub 2007, 122.
92 Acemoglu, Robinson 2012.

425. It was around this time that state pay was also extended to cover political attendance at the Boule, the so-called bouleutic μισθός.[93] In his usual polemical manner, Isocrates makes the point that Athenian citizens found the three obols per day for jury service a more attractive proposition than rowing in triremes: 'we see many of our fellow-citizens drawing lots in front of the law-courts to determine whether they themselves shall have the necessaries of life, yet thinking it proper to support at their expense any of the Hellenes who will deign to row their ships' (Isoc. 7 54). Though the pay was only half as much as that of a trireme rower, the easier and far less risky job of jury service may have had considerable attractions for many citizens.

5 Size Matters

Naval activities in general, and naval warfare in particular, consumed enormous resources and constituted such a large proportion of its economic surplus that it largely determined the size and shape of the economic structure of classical Athens. The operation of the navy, together with its associated administrative and financial structures, necessitated a complex institutional structure commensurate with its primary task of delivering a strategy of conquest. The funding of this impressively large and expensive naval infrastructure was the principal focus of Athenian public finances, both income and expenditure, and was pivotal in determining both the structure and performance of its political economy. Athenian defence spending, of which the navy was the largest single component, constituted the largest element of total state expenditure and so remains our most important metric in any attempt at estimating the overall size and direction of the Athenian economy. However, as we shall see, assessing the size of this naval economy is fraught with considerable difficulties.

A perennial complaint of ancient economic historians is the virtual complete absence of any statistical data sets, especially relating to financial or economic matters.[94] This problem is exacerbated by the fact that any data that have come down to us are often isolated, disjointed figures offering little scope for comparative analysis. Macroeconomic level statistics of the kind familiar to modern analysts simply do not exist for the ancient economy. Because of inherent limitations in our principal sources with respect to the availability

93 Rosivach 2010, 145–148.

94 Hopkins 1980, 101–125, 116–120,124–125.

and reliability of ancient numbers, it is understandable this is an exercise with which scholarship to date has been reluctant to engage to any serious extent.[95]

Amongst modern scholars, Thucydides' reputation for care and accuracy, even regarding numbers, is generally well regarded. Hornblower, for example, cites Thucydides' use of numbers as one of his virtues, because he avoids 'inflated figures'.[96] The figures provided by Herodotus are regarded with far more circumspection. For instance, Herodotus' claim that Xerxes' invasion force of 480 consisted of over 5 million men (Hdt. 7.186) is treated with universal scepticism.[97] But fastidiousness with respect to numbers is something for which none of our principal sources has a privileged claim. The tendency to overstate the numerical case is also in evidence in Thucydides as when he has the Athenians claim they provided 'a little less than two-thirds of the whole four hundred' ships at Salamis (Thuc. 1.74) whereas, in reality, it was more like 200 out of 378, half rather than two-thirds.[98] There is no suggestion that ancient sources deliberately fabricated the numbers, which would fundamentally undermine the reliability of their accounts. Rubincam points out that there was little or no appreciation of the modern concept of data collection in 5th century Greece commenting, 'even the most conscientious historian would have to make do often with numbers that were mere approximations.'[99]

There are numbers in both Herodotus and Thucydides relating to money, troops and ships, but with respect to all these categories the data is often patchy 'because of the great difficulty, or even impossibility, for even the best intentioned and most diligent ancient writer to obtain such data.'[100] In comparing the use of numbers in Herodotus and Thucydides, Keyser suggests that although Thucydides uses a rhetoric of reliability 'his treatment of numbers and other phenomena can be shown to be often irrational'.[101] The modern preference for Thucydides' secular rationalism is challenged by Keyser, in particular with respect to his use of numerical information and quantifiable data which he argues is less rational than Herodotus.[102] Keyser argues that fundamentally,

95 I discuss below some attempts to grapple with this issue. For more detailed commentary on more general problems with our principal sources see Appendix: Sources.

96 Hornblower 1994, 202–204.

97 Rubincam 2008, 96.

98 378 is Herodotus' figure for the size of the Greek fleet at Salamis (Hdt. 8.48) but Herodotus' abacus seems to have malfunctioned as by his own figures for individual contingents (Hdt. 8.43–48) that total only adds up to 366 see Walters 1981, 199; Hornblower 1991, 119.

99 Rubincam 2003, 462.

100 Keyser 2006, 336.

101 Keyser 2006, 323.

102 Keyser 2006, 349.

Thucydides' use of numbers is as descriptors in trying to express the extraordinary or unexpected aspects of naval encounters.[103] This is countered by Cawkwell who suggests that as a historian Thucydides had a 'monstrous passion for seeking out the truth'.[104] But whatever the differences in numerical practices between these two paramount ancient historiographers, of more significance for our purposes is the enormous difference in attitude between both of them and modern scholarship with respect to the use of numbers.[105] In any such exercise, Rubincam offers the judicious advice that we need 'to keep constantly in mind how hard it was for any ancient historian, however high-principled and painstaking, to obtain accurate, up-to-date numerical information.'[106]

While references to extensive ship numbers in both our literary and epigraphical sources may be sporadic, they are sufficiently numerous to allow us to present a realistic picture of the growth and development of the fleet throughout our period. In the exercise that follows, I have endeavoured to capture the vast majority of the large fleet references in our sources, however, it is important to note that it is impossible be confident that the sources themselves provide a faithful record of all Athenian naval operations throughout our period. There is also, as already noted, a tendency in our literary sources (or the sources upon whom they relied) to gild the numerical lily by giving some exaggerated figures for fleet sizes, some of which comprise suspiciously round numbers. On the positive side, the generality of references to fleet sizes and ship movements in our sources are, from a statistical point of view, significant and therefore any over or under statement in each of the individual figures is likely to be offset across the data set as a whole; thus none of these limitations is likely to be sufficient in itself to prove fatal or negate the whole exercise.

Given the scale of the commitments made in infrastructure, manpower and financial resources, the Athenian navy represents the single largest cumulative investment by the polis throughout the 5th and 4th centuries. The purpose of the following numerical analysis is to try to scope the scale of the resources involved, with a view to assessing the economic implications of such large-scale naval investments. As discussed, because of inherent limitations in our principal sources with respect to the availability and reliability of ancient numbers, it is understandable this is not an exercise with which scholarship to date

103 Keyser 2006, 345.
104 Cawkwell 1997, 2–16.
105 In Thucydides' case his figures and statements must have an inherent credibility, as he had been a high-ranking Athenian naval commander.
106 Rubincam 1991, 181.

has had extensive engagement.[107] Despite the difficulties, given the importance of aggregate naval resources for any serious evaluation of both the structure and performance of the political economy of Athens, any attempt to overcome these limitations must be deemed worthwhile. While infrastructure and related costs were significant, it is the ongoing costs of operating the fleet that consumed the vast bulk of Athenian financial resources. Thus, the size of the trireme fleet as detailed in Table 2, from its coming of age in the 490s to its final defeat at the battle of Amorgos (322), is an invaluable leading indicator for the rise and fall of Athenian economic fortunes. In practical terms, what is provided here is not a database but a tabular compilation of the size of the Athenian navy, according to the sources, from the 490s to 322 at various points for which we have source evidence. From Table 2 and the accompanying Graph 1, it is readily evident that Athens possessed an impressively large navy, varying in size from 200 to 400 triremes throughout our period.

TABLE 2 Athenian fleet size 480–322 BC[108]

Date	Location	Comment	Source	Ships
490	Aegina-Corinth	20 ships from Corinth + 50 existing = total fleet 70	Hdt. 6.89; Thuc. 1.41.2.	70
480	Artemision	127 Athenian + 20 manned by Chalcidians	Hdt. 8.1.1–2, 14	**147**
480	Salamis	Total Greek triremes 378 of which 180 were Athenian	Hdt. 8.48, 8.44	**180**
468	Eurymedon	Cimon led an expedition of 200 Athenian and 100 allied ships	Diod. 11.60.3; Plut. *Cim.*12	**200**
460/59	Egypt	200 in Egypt, At least 80 against Aegina + 70 captured from Aegina	Thuc. 1.104.2, 105.2	**350**
450	Cyprus	Persian navy defeated off Cyprus. Peace of Callias ends Persian presence in Aegean.	Thuc. 1.112; Diod. 12.3	**200**
446–431	Athens	During the Thirty-Year Peace (lasted 14 yrs.) Athens built a further 100 triremes. 215 triremes at Samos in 440–39.	Andoc. 3.5; Thuc. 1.116–117.	**300**
431	Athens	Pericles eve of Peloponnesian War confirms 300 serviceable triremes	Thuc. 2.13.8	**300**
430	Peloponnese	100 triremes sent to raid Peloponnese coast. Fleet size remained 300+	Thuc. 2.56, 58, 69; Plut. *Per.* 34.1	**300**

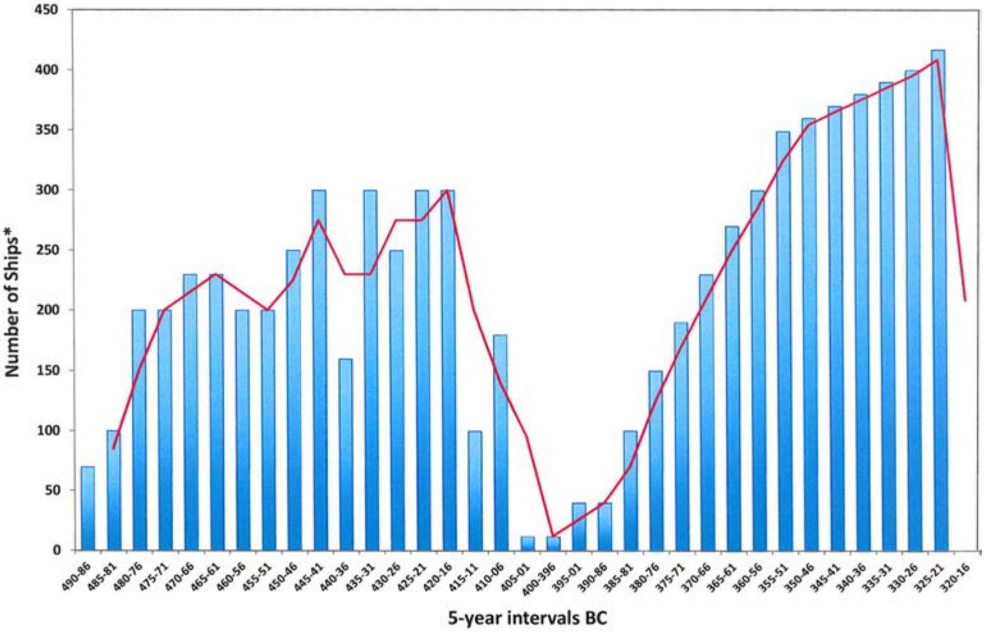
107 I discuss below some attempts to grapple with this.

108 The vast majority of the ship numbers in bold are the actual size of the Athenian fleet mentioned in either literary or epigraphical sources. Where the number is a compilation of source figures, the details are provided in the comment panel.

TABLE 2 Athenian fleet size 480–322 BC (*cont.*)

Date	Location	Comment	Source	Ships
431–28	Attica, Epidaurus, Euboea, Potidaea	250 first-rate ships on active service + 100 in reserve	Thuc. 2.24.2, Thuc. 3.17	350
431–21	Athens	Few losses during Archidamian War fleet was restored to 300 ships. 400 trierarchs appointed per annum.	Andoc. 3.9, Ps. Xen. *Ath. Pol.*3.8.	300
413	Syracuse	Disastrous loss of 200 ships in Sicily	Thuc. 7.87.6	300
412	Samos	1,000 talents to man large fleet; 37 ships plus a further 100 ships based at Samos.	Thuc. 8.15.	200
405	Aigospotamoi	The Athenian fleet restored to 180 ships	Xen. *Hell.* 2.1.20, 1.6.22–25.	180
404	Athens	Athens defeated, fleet reduced to 12 ships	Xen. *Hell.* 2.2.20; Andoc. *De pace* 12; Plut. *Lys.* 15	12
392/1	Athens/ Piraeus	Long walls, Piraeus fortifications re-built. Shipbuilding re-starts.		50
378	Athens	By Second Athenian League Athens had 200 triremes. Isocrates 'over 200 triremes'	Diod. 15.29.6; *IG* II^{2}.1604; Isoc. 7.1	200
357/6	Piraeus	Epigraphic evidence for enormous expansion of Athenian fleet in 20 years.	*IG* II^{2} 1611, lines 5–9	283
354	Piraeus	Demosthenes states 300 triremes	Dem. 14.13.	300
353/2	Piraeus	Epigraphical evidence for 349 ships	*IG* II^{2} 1613, line 302	349
330/29	Piraeus	Fleet was larger than 300 strong imperial fleet 100 years before (Thuc. 2.13.8). 399 triremes + 18 quadriremes.	*IG* II^{2} 1627, lines 266–269,275–8	417
326/5	Piraeus	There were 360 triremes and 50 (estimate) quadriremes.	*IG* II^{2} 1628.482–491	410
325/4	Piraeus	Epigraphical evidence for 260 triremes, 50 quadriremes and 7 quinqueremes	*IG* II^{2}1629. 1–278	317
323/2	Amorgos Echinades	Athens had 315 triremes and 50 quadriremes. Athenian navy (170 ships) defeated at Amorgos and again by Macedonian fleet at Echinades. End of Athens as a naval power.	Diod. 15.8–9; *IG* II^{2} 1631.167–174	365

While some of the numerical details of both Table 2 and Graph 1 can and will be disputed, and no doubt with further effort could be greatly improved, the essential impression they convey remains valid. Graph 1 is an important visual expression of the centrality of the navy to the political economy of classical Athens, reflecting as it does not just the rise and fall of its military preeminence, but its economic fortunes as well. In this respect, the graph could



GRAPH 1 Trend in Athenian fleet size during 5th and 4th centuries
Note: The figures in this bar chart are based primarily on Table 2, but with estimates substituted for any 5-year interval for which there is no source evidence. This is to provide the reader with a clearer view of the trend in the fleet size over the whole period.

easily be viewed as an analogue for the performance of the Athenian economy throughout the more than a century-and-a-half of the classical period—a virtual GDP time-series for classical Athens. As the graph clearly illustrates, economically, the story of classical is a game of two halves: the economic vibrancy of the imperial 5th century ends abruptly with an ignominious defeat at the hands of Sparta, only to recover again rapidly and scale even greater economic heights during the subsequent 4th century. The reasons behind this extraordinary economic rejuvenation will be explored in the next and final chapter.

CHAPTER 12

The Wealth of Naval Athens

1 The Versatile Trireme

When it comes to dealing with the navy in historical treatments of classical Athens, the focus of our sources and much modern scholarship has centred on sea-battles. An impression is thereby created in which naval operations are seen largely as military engagements at sea.[1] The intense scholarly debate on the trireme, and in particular the origin and evolution of many of its features, including that of the ram, has helped foster this impression by presenting the trireme primarily, and sometimes exclusively, as a ramming weapon.[2] The whole evolution of Greek warships is summarised by Strassler in the following terms: 'In the centuries between Homer and Thucydides, warships evolved from transports that carried warriors to the battlegrounds where they disembarked and fought on land, to fighting machines designed to ram and sink opponents on the seas.'[3] Likewise Gabrielsen, one of the most authoritative scholars on ancient Greek naval history, identifies the two most significant features of recent scholarship as, the advent during the second half of the 6th century of publicly financed Greek navies, and the replacement of multi-purpose vessels (triaconters and penteconters) by ones 'exclusively designed for warfare at sea, the trireme … which for tactical purposes were primarily used as weapons, that is, as floating missiles with a powerful bronze ram.'[4]

Ramming was a tactic for which the Athenian trireme of the classical period was uniquely designed to accomplish, but it has to be remembered that ramming was an inherently risky manoeuvre for the attacking ship and was not

1 Strauss 2005, 41. Strauss claims that 'the Aegean Sea was the scene of hundreds of trireme engagements during the classical Greek period'. If by 'engagements' he means battles then it is an over statement, as we shall see.

2 Morrison et al. 2000, 54–55, emphasises that even as early as Artemisium Greek trireme crews were experts at using the trireme 'as a ramming weapon' with both commanders and rowers demonstrating the great skills and discipline 'necessary to carry out a difficult movement with precision.' When Herodotus says the Athenians 'captured thirty ships' (Hdt. 8.11.2) Morrison et al. 2000, 54 qualify the quote as follows; 'captured [i.e. towed away after ramming] thirty ships'—towing away 30 submerged, water-logged triremes seems a much less likely occurrence than towing them away after being captured fully intact through boarding.

3 Strassler 2008, 825.

4 Gabrielsen 2001, 72–73.

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likely to be indulged in willy-nilly.[5] The violence of the ramming technique, and the dangers it posed for the attacking trireme and its crew, is illustrated by the drowning incident involving the Spartan Admiral Callicratidas, who was lost overboard when his trireme rammed an Athenian ship at Arginousae (Xen. *Hell.* 1.6.33). One of the other direct references to ramming is Herodotus' description of how the battle of Salamis actually began. The Greeks' morale was so low at this point that it necessitated an act of subterfuge by Themistocles to get them to engage because 'the Hellenes were unwilling to go into battle, it proved necessary to lead them to it against their will' (Hdt. 8.80.1). Following an initial advance by the Persian fleet, the Greeks began to back away, 'but an Athenian, Ameinias of Pallene, had advanced his ship further out, and he rammed one of the enemy's vessels. The two ships became entangled and could not be separated, so it was in that manner, the others came to help Ameinias, that the battle started' (Hdt. 8.84.1). It may well be that its privileged position as the opening Greek naval action of this iconic battle could have contributed to an over-emphasis on ramming in subsequent scholarship.[6] However, the context in which this particular ramming took place makes it look more like an act of desperation, as the Greeks were 'encircled by our enemies'. (Hdt. 8.78.3).

Neither should it be assumed that the version of the immensely impressive *Olympias* trireme with its imposing bronze ram (essentially a 4th century or later design) was the type of trireme built at Athens during the late 6th and 5th centuries. As we have seen in chapter 8, this was a period in which there was extensive nautical design innovation, a process of gradual change and improvement in which an *Olympias*-style trireme was far more likely to have been the end result rather than the point of departure. The incorporation of nautical design innovations such as the out-rigger and the wine-glass shaped hull added increased stability, greater speed and manoeuvrability to the trireme, as compared with its immediate predecessor the penteconter. But increased strength, stability, speed and manoeuvrability did not just improve the trireme's capabilities for ramming, they also made a new range of battle tactics feasible for the first time, including the far less risky tactic (for the attacker) of the *diekplous* in which an enemy ship was disabled by having its oars sheared off.[7] At Lade the Phocaean, Dionysios, trained the Greek navy in the strenuous manoeuvring of the *diekplous*, and significantly, 'he armed the marines who fought from the deck' (Hdt. 6.12), an indication that *diekplous* combined with ship-to-ship

5 Wallinga1993, 5, 73–74.
6 Herodotus says that this is the Athenian version of how the battle began and then says there was an alternative Aeginetan version (Hdt. 8.84.2).
7 Holladay 1988, 491.

combat and not ramming was to be the primary battle tactic. It is also noteworthy that in the immediately pre-Salamis naval engagement at Artemisium, the initial probing by the Greek navy was specifically designed to ascertain the Persian navy's capabilities in this important tactic, as Herodotus relates: 'they hoped to test their enemies in battle and in their use of the breakthrough manoeuvre' (τοῦ διεκπλόου, Hdt. 8.9). This, of course, is not to suggest that ramming was unimportant, but the modern over-emphasis on ramming has tended to obscure both the versatility of the trireme and, consequently, its widespread deployment by classical Athens in many other important roles.

The transition to mortise-and-tenon did not just improve the trireme's ability to withstand ramming collisions, it also improved the vessel's overall strength and increased its length, thereby greatly enhancing its carrying capacity for troops and horses. Thus, in path dependence terms the trireme maintained the penteconter's traditional capability as a troop transport[8] with the additional benefit that it could accomplish this role more effectively and much more efficiently, while at the same time adding considerably to the repertoire of battle tactics; for instance, they were used extensively in sieges and blockades some of which lasted months and even years. So, the tendency to consider the trireme exclusively in terms of its function as a ramming machine in naval battles needs to be tempered, as Morrison was anxious to emphasise: 'Performance in battle was the main function of the trieres, but it was not the only one. She was the means by which Athens exerted her influence throughout the Eastern Mediterranean.'[9]

This underappreciation of the importance and extent of other types of expeditions and operations in which the navy and triremes played an essential role has also meant that their economic significance has not been fully recognised. While battles and conflicts at sea are dramatic and are generally extensively reported in our sources (though with far less numerical details than one would wish), the navy's triremes were involved in many other important facets of Athenian imperial business, from transporting troops, ferrying cleruchs, providing grain escorts, ambassadorial and sacred missions, collecting tribute (Thuc. 3.19) and conducting routine patrols and training exercises (Thuc. 1.80, 1.142.7; Xen. *Mem.* 3.5.18).[10] The references in our sources to many of these activities are often casual and incidental and, given their unimportance

8 The trireme was also deployed extensively (suitably modified) as a horse transporter (Thuc. 2.56.2, 6.43).

9 Morrison et al. 2000, 94.

10 See a detailed breakdown of all these activities as documented in our sources for both the 5th and 4th centuries (480–322) below.

to the overall authorial agendas of our primary literary accounts, they are likely to have been significantly underreported. Naval battles were expensive in terms of manpower and ships, but aside from these dramatic engagements, the mundane business of empire would have also placed significant on-going demands on naval resources.

The significance and beneficial naval consequences of these seemingly incidental services is emphasised by Ps. Xenophon: 'as a result of their possessions abroad and the tenure of magistracies which take them abroad, both they and their associates have imperceptibly learned to row; for of necessity a man who is often at sea takes up an oar, as does his slave, and they learn naval terminology.' (Ps. Xen. *Const. Ath.* 1.19). In contrast to large levies of crews to man battle fleets in which foreign mercenaries, metics and slaves participated, routine naval activities would have provided regular paid employment for large numbers of citizen thetes whose purchasing power would have had substantial positive consequences for the Athenian political economy. Unfortunately, apart from Plutarch's comment that Pericles sent out 60 triremes every year for 8 months training (Plut. *Per.* 11), we have little basis for calculating the extent or the cost of these ancillary naval activities.[11] None of this of course is to seek to deny the importance of sea-battles and engagements at sea as the single costliest type of military activity pursued by classical Athens on a regular basis.

2 Counting the Cost of Naval Deployments[12]

During the period from the foundation of the Delian League (477) to the Peace of Callias (449), Athens and her allies were involved in a number of major campaigns which involved significant naval forces of around 200 triremes, including Eurymedon (Thuc. 1.100), Egypt (Thuc. 1.104) and Cyprus (Thuc. 1.112); 'the total costs of these operations must have been considerable, perhaps 5,500T'.[13] Adding the costs of dealing with the revolts of Thasos and Naxos and some

11 At 1 drachma per day these training exercises would have amounted to 480 talents per annum if the triremes were fully manned (at least with rowers)—most likely if the training was to be effective.

12 In the main, the focus here is on naval costs but on several occasions scholars discuss the more general military costs while accepting that naval expenditure constituted the bulk of such costs.

13 Unz 1985, 24–25. At three obols a day Unz gives the cost breakdown of these campaigns as follows—Eurymedon: 200 ships × 0.5t./month × 8 months = 800 t., Egypt: 100 ships (a conjectural average strength) × 0.5t./month × 70 months = 3,500t or more, Cyprus: 200 ships × 0.5t./month × 8 months = 800 t. = TOTAL 5,500 talents.

less intensive campaigns such as Eion, Scyros, Sestos, Byzantium and Carystus (Thuc. 1.98), the total naval costs for the 29-year period (excluding routine patrols) Unz estimates to have been 10,000 talents—a figure which doubles if the pay rate is the more commonly accepted 1 drachma per day.[14]

These calculations by Unz are contested by Samons who suggests, 'it is very optimistic to believe that we can even approximate the costs of league military campaigns as far back as 460s', though he does accept that 'the cost of campaigning in the years after 478/7 was great, but we cannot attach even a rough figure to the costs.'[15] On the specifics, his main objection is to the attribution of an eight month duration to the Eurymedon campaign for which there is no source evidence, and which would be 'an unusually long campaign under any circumstances.'[16] Pritchard, who insists that 'the global cost of Athenian military activity cannot be reliably calculated before the late 430s', is also critical of Unz because his calculations assume an eight-month campaigning season and crew pay of three obols per day, and 'neither assumption is secure.'[17] However, for the period of the Peloponnesian War, because of greater source evidence 'we have consistently detailed information about the expeditions of these three decades.'[18]

It is clear from several sources that following Eurymedon (late 460s) and the diminution of the Persian threat, the allies became increasingly reluctant to continue participating directly in the League's activities, preferring to contribute money instead of ships and sailors. The allies may also have made a self-interested cost-benefit calculation: with Persian booty no longer available to defray naval expenses, payment of a fixed annual amount of money in the form of tribute was possibly more palatable to them than the potentially open-ended financial risks involved in direct participation. The cost of a trireme including equipment was one talent, but as Blackman makes clear the main cost of fleet

14 Unz 1985, 25. These figures are all based on three obols a day, which most scholarship accepts is not the case; even when Thucydides mentions the three obol figure it is in the context of a reduction from 1 drachma (Thuc. 8. 45.2) and in the same year it was agreed to pay 'over and above the three obols a day' (Thuc. 8.29.2) and 16 years before the exceptional rate of 2 drachmas per day was paid (Thuc. 3.17.4). It should also be noted that these figures concern pay rates only and do not include other expenses such as 'provisioning, equipage and upkeep (which) will have increased these costs significantly.' Samons, 2000, 306.

15 Samons 2000, 305,307. Similarly, Pritchard 2007, 125.

16 Samons 2000, 306–307. His conclusions are categorical: 'We can put little stock in such calculations, which obscure the large margin of error involved and rest on dubious underlying assumptions.'

17 Pritchard 2007, 125.

18 Pritchard 2007, 125.

operations consisted of crew payments for which 'the periods would vary in length, and the resulting expense in money, let alone in ships and men's lives, might be high.'[19]

There were important financial management and economic benefits which also accrued to Athens because of this allied transition from ships to silver. Money instead of ships gave sole discretion to Athens to allocate these financial resources to whatever purpose she deemed appropriate—an impressive public building programme in the case of Pericles, for instance. The economic returns would also have been significant, as this extra revenue invested in naval assets resulted in increased employment both directly on board ships, in the dockyards and the harbours of Piraeus and, indirectly in ancillary naval supply industries.[20] Ship construction previously undertaken by the allies in their own states was transferred to Athens with consequent benefits for specialist naval craftsmen with skills in carpentry, textiles, leather, and metallurgy. Increased division of labour and skill specialisation in naval logistics, ship maintenance, hull fabrication, ship's timber components, sail and rope manufacture would have transformed Athens into the preeminent centre for naval industries in the Aegean. Such economic consequences for the allies were in exactly the opposite direction. As their pool of nautical craft-skills reduced, their appetite for making major capital investments to replace ageing triremes diminished, reinforcing the cycle of decline and concomitantly increasing the appeal of fixed monetary payments, at least for the less advanced maritime states. A not inconsiderable security advantage for Athens also resulted from all of this. As these specialist craftsmen were increasingly drawn to Athens to seek employment there were less available to the allied states, and as a direct consequence the allies had a diminished capacity and capability to pose a challenge to Athenian naval supremacy. Though the financial and economic benefits for Athens were unquestionable, the presumed financial advantages for the allies did not materialise contributing, perhaps, to increasing incidences of revolt.[21]

From Böckh's pioneering work on Athenian public finances onwards, scholarship has been concerned principally with the income side of Athenian finances.[22] Work on the expenditure side has often been more a function of trying to resolve the large discrepancies between the figures provided by literary sources and those provided by epigraphy. Divergences between literary and epigraphic evidence is not unusual when it comes to figures. The few attempts

19 Blackman 1969, 186.
20 Blackman 1969, 185.
21 Blackman 1969, 188.
22 Böckh (1815) 1886.

at estimating the costs of naval expenditure that have been carried out are often a derivative of this source discrepancy debate. For instance, Pericles says the tribute from the allies in 431 was around 600 talents (Thuc. 2.13.3) while the figure provided by the Tribute Lists[23] for the nearest year 433/2 is 390 talents, a difference which French says, 'casts an ugly doubt over the accuracy of Thucydides' methods.'[24]

It was also during the early part of the Peloponnesian War that the siege of Potidaea took place, the most expensive attested campaign at 2,000 talents (Thuc. 2.70.2), in which the sailors involved were paid 1 drachma per day (Thuc. 3.17.4). The operations at Samos (441/0), which were spread over two campaigning seasons, lasted a total of 9 months (Thuc. 1.117.3), and involved a long siege, cost a total of 1,200 talents (Diod. 12.28.3; Nep. *Timoth.* 1.2; Isoc. 15.111). French's assessment of the costs of naval operations involved in the Samian revolt indicates 'there is a consistency in the figures which suggests that our estimate of 100 t. a month for the cost of a major task force is not unrealistic.'[25] Fornara provides a more detailed analysis of these Samian events in which he assesses Pericles' summer campaign of 441 there to have cost around 126 talents,[26] a figure which 'is not only reasonable in itself but also reminds us of the danger of assuming that such "events" came about in an instant of time.'[27] He arrives at the figure of 126 talents for this episode of the campaign because 'we may assume the cost of a trireme to have been one talent monthly and that the forty ships remained in Samian waters for a period of two to three months is completely understandable.'[28] For the payment of 908 talents made in 440/39 Fornara calculates this 'is something more than 5 1/2 months' pay for a fleet of 160 triremes.'[29]

Xenophon states there were 9 triremes permanently stationed in the Hellespont around 410 charged with protection of the merchantmen grain ships

23 Merritt 1950, 344.

24 French 1972, 2.

25 French 1972, 2. This figure is calculated on the basis of three obols per day pay rate, i.e. half a talent per month per ship, with an unstated but implied definition of a 'major task force' being 200 triremes fully crewed.

26 Fornara 1979, 9, derives his figures from *IG* 1^2 293 (ML. 55) in which 3 disbursements are made for the two-year period; 128 T, 368 T, and 908 T, making a total of 1,404 T. His purpose is not to assess naval expenses but to use the naval expenditure calculated at one Talent per ship-month to determine a more accurate chronology of the two-year Samian campaign.

27 Fornara 1979, 12.

28 Fornara 1979, 12.

29 Fornara 1979, 13.

which they did successfully until Aegis sent a force of 15 ships to attack them and disrupt the Athenian grain supply (Xen. *Hell.* 1.1.36). The importance of securing the Black Sea grain routes is again underlined by the fact that one of the reasons for Athens ending the Corinthian War, and agreeing the King's peace, was that in 387 an 80 strong Spartan fleet of triremes succeeded in commandeering grain on route to Athens (Xen. *Hell.* 5.1.28). Similarly, in 362, according to Rosivach, Athens sent 40 ships to the Hellespont to protect grain transports from Macedonian attack, an operation which lasted a month and a half.[30] We can also glean some indication of the number of triremes at sea during the late 4th century from the Naval Records, especially for two of the years during 330/29 and 325/4. They record 62 (ten of which were quadriremes) and 39 ships at sea when the inventory was compiled (*IG* II^2 1627. 266–269,275–8; *IG* II^2 1629.783–812), which, if fully crewed, would require 12,400 and 7,800 sailors, respectively. As winter storms posed real danger for triremes most returned to the Piraeus for repair and maintenance during the winter.[31] With regard to routine patrolling Rosivach makes the observation (without proffering a number) that 'the number of ships engaged in routine patrolling was probably much the same from year to year.' But there were many exceptions to this: Demosthenes (Dem. 50) refers to a fleet of unspecified size sent to the northern Aegean in 362 that was away for a total of 17 months.[32]

According to Faraguna, Lykourgan (336–324) revenues amounted to 1,200 talents per annum, an unprecedented figure compared to any other period.[33] By the mid-4th century the lean days of the late 5th and early 4th centuries were replaced by a period of economic vibrancy reflected in 'an unprecedented boost in the total number of ships' such that 'Athenian naval potential had expanded considerably, quickly reaching and surpassing its fifth-century standard.'[34] With Athenian efforts to provide anti-piracy measures, increased security for grain shipments, and routine patrolling from the mid-4th century onwards, 'it seems probable that at any one time there may have been up to sixty ships at sea.'[35]

Whether Athenian sailors were paid 3 obols or 1 drachma per day has been a hotly contested topic within scholarship for generations. Pritchett has made

30 Rosivach 2001, 12.
31 Rosivach 2001, 14.
32 Rosivach 2001, 21.
33 Faraguna 1992, 289–396. For 5th century imperial revenues see Burke 2005, 5–47; Meiggs 1972, 89–90.
34 Gabrielsen 1994, 131.
35 Burke 2010, 399.

the argument that for the 5th century the standard rate of pay for both sailors and hoplites was 3 obols and that 1 drachma was only paid in exceptional circumstance.[36] This is very much against the views of Loomis who argues for a standard rate of 1 drachma, based on the fact that Thucydides mentions this figure up to eight times as against three obols only once.[37] van Wees suggests regular pay largely replaced booty for sailors after the Persian Wars and was paid at the rate of 1 drachma per day, a practice that enabled Athens to secure the most able crews in the naval labour market.[38] Gabrielsen is ambivalent as to which rate predominated but concludes that 'aggregate resource demands accruing from the operation of fleets exceeded the amounts actually spent for that purpose by the state. Private funds were therefore needed to supplement the public ones.'[39] In 431 when Athens created a reserve fleet of 100 triremes to be deployed only in the event of the city being under direct threat from a hostile fleet, they also set aside 1,000 talents to be used in the same circumstances and made it a capital offence for anyone to even propose to use them for other purposes (Thuc. 2.24). By 412 the Chian revolt caused consternation in Athens and they voted to use the reserve 'to man a large number of ships' (Thuc. 8.15). The enormous fleets being deployed by Athens during this period were clearly causing acute financial problems and sailors pay is likely to have been reduced to 3 obols for a time (Thuc. 8.45.2), but it was an exceptional measure taken in extremis to depart from the norm of 1 drachma per day.

Burke believes naval pay during the post-Chaeronea period was between four obols and a drachma per day, and so for an eight-month sailing season he estimates the annual costs for this type of security patrolling to have been between 320 and 480 talents per annum. The latter figure is more likely to be closer to the actual cost based on the evidence just advanced. In addition, as Loomis has demonstrated there were some inflationary pressures on labour and other costs between the 430s and the 330s,[40] and towards the end of this period the increased competition in the mercenary naval market, with Macedonia and Persia seeking crews in addition to Athens, the payment of 1 drachma per day is likely to have been the standard rate. The other major large-scale labour-intensive industry was construction and the annual costs of the Lyk-

36 Pritchett 1971, 16–23.

37 Loomis 1998, 56. Fornara 1979, 12–14, also assumes 1 drachma per day. The most convincing case for 1 drachma is provided by Gallo 1987, 36–45.

38 van Wees 2004, 237–238.

39 Gabrielsen 1994, 110–114.

40 Loomis 1998, 240–250. See also Loomis 1995, 233–234. There was, however, no hyperinflation as would normally result from very large increases in money supply.

ourgan building programme in Athens are estimated by Burke to have been an average of 200 talents per annum.[41] Based on this, Burke's conclusion is that 'combined with the building program, naval pay accounted for close to half or more of the state's annual expenditures post-Chaeronea, and of the two, naval pay would have taken the lion's share.'[42]

3 The Business of Empire

The 6th century Aegean did not experience Mahanian strategic sea-power, the test of which was a state's ability to exert complete dominance through command of the sea.[43] For example, Polycrates could extract economic advantage through his control of the adjacent sea-routes of the eastern Aegean. For Thucydides, it was Corinth that came to exercise similar control because her wealth enabled her 'when traffic by sea became more common, to procure her navy and put down piracy … she acquired for herself all the power which a large revenue affords.' (Thuc. 1.13.5). Mahan's model of strategic naval-power, however, required far more than what 6th century Samos or Corinth could deliver. The distinction between control of the sea and command of the sea is critical: 'The difference between *sea control* and *sea command* is essentially a question of totality. *Sea command* refers to the complete and unfettered ability of one side to do on or by the sea what it wishes, unopposed.' (emphasis in original).[44] To achieve the high bar of Mahanian strategic domination through naval power, a state had to have overwhelming financial and manpower resources to impose its naval will far from its own territory through a range of activities including: long-term blockades and sieges, ensuring safe sea-lanes for international trade (eradication/control of piracy) and providing resource security for its vital supplies of raw materials (grain and timber in the case of Athens).[45] Thus maintaining Athenian hegemonic control of the Aegean involved much more than winning sea-battles—it was a necessary, but not a sufficient condition.

41 Burke 2010, 400. The most expensive aspects of construction costs were labour and transport, Burford 1965, 30.
42 Burke 2010, 401.
43 Palmer 2005, 17, argues that galleys were incapable of achieving strategic command, only 'with the advent of the European sailing navies did states seek to command the seas'.
44 Nash 2018, 136 n. 16 who provides an excellent analysis of the exercise of Athenian naval power during the Peloponnesian War. For definitions of command and control see also Till 2013, 145–150.
45 Mahan 2010 (1890), 13–21.

TABLE 3 Recorded naval activities 480–322[a]

	Total	%	5th century	%	4th century	%
Sea Battles	83	9	68	9	15	8
Other Military Activity[b]	443	49	379	52	64	36
Routine Patrols/Security[c]	381	42	280	39	101	56
Total	**907**	100	**727**	100	**180**	100

a Potts 2008, 306. These figures are a summarised version of naval activities provided in a table in Appendix 3, 'Figures for Naval Activity in the Fifth and Fourth Centuries BC'. Potts' thesis focuses on the ideology of the navy and its political role in shaping Athenian democracy.

b These are incidents involving naval support as troop transports for land battles, sieges, blockades, and ravaging raids.

c Activities here include patrols, security for grain convoys, anti-pirate expeditions, diplomatic/religious missions, cleruchy transport and tribute collection.

As can be seen from Table 3, sea-battles throughout our period constituted just 9% of naval activities, with the vast majority of naval activities being either other military activities (49%) in which the navy acted as support, or routine patrolling and security duties (42%). One of the immediately striking features of the figures in Table 3 is the enormous difference between the number of naval activities that took place in each century. While the proportion of each activity category remained broadly the same, the total number of reported naval actions in the 5th century was 5 times that of the 4th. This drop in naval activity is largely explained by Athens being in recovery and consolidation mode for much of the first half of the 4th century. It may also be partly because our principal sources for the 4th century, Xenophon and Diodorous, being less invested in a naval agenda than their 5th century predecessors, were less assiduous in their reporting of naval activities. In absolute terms, at 526, sea-battles and associated military events are the predominant form of naval actions during the 5th century with the 4th century equivalent figure being only 79. The 4th century also sees a switch in emphasis to routine patrols and security missions which at 101 become the preponderant type of naval undertaking.

Although the continuities between the 5th and 4th century Athenian attempts to maintain her hegemony of the Greek world were numerous, much had changed irrevocably. The enormous revenue flows from allied tribute were replaced by lesser and more contingent allied financial commitments. Though Athens managed to form the Second Athenian League from the early 370s, compared with Delian league of the previous century, her ability to control and manipulate allies was severely circumscribed. The population losses from

both war and disease during the Peloponnesian war were enormous, one of the more immediate demographic consequences of which was a shortage of labour throughout the following century in a critically important sector of the economy, the navy. In the context of the new League, tribute (φόρος) could no longer be imposed and there is no evidence for the participation of allied ships in any naval operations. Instead, the allies now made a monetary contribution (σύνταξις),[46] and it is presumed that such contributions were collected by the admirals during naval operations. These payments were different from tribute, which was a general assessment, while these new contributions from the allies were for specific services rendered.[47] In a little over a decade, Athenian imperialist ambitions had re-surfaced and began to grow in inverse proportion to the state of her revenues which, by the end of the Social War, were in a parlous state standing at only 130 talents (Diod. 10.37). In Cawkwell's pithy phrase, 'poverty required imperialism.'[48] Athens had lost key possessions in the northern Aegean—Amphipolis, Potidaea and Olynthus—and due to acute manpower shortages, 'squandered to no purpose more than a thousand talents on mercenary troops' (Isoc. 7.9).[49]

Yet, despite the changed conditions and straitened financial circumstances, by the early 370s Athens had re-built her naval strength to 'over two hundred triremes' (Isoc. 7.1), a level at which she had begun her acquisition of empire one hundred years earlier (see Table 2). But much had changed. Even allowing for rhetorical flourishes and elite sniffiness, Isocrates draws a sharp contrast between the two fleets due, he insists, to the inferiority of contemporary Athenians as compared to their 5th century ancestors: 'when they resolved to wage war against any state, [they] deemed it their duty, notwithstanding that the Acropolis was stored with silver and gold, to face danger in their own persons in support of their resolutions, we, on the other hand, notwithstanding that we are in such extreme poverty and are so many in number, employ, as does the great King, mercenary armies!' (Isoc. 8.47).[50]

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46 Badian 1981, 91.

47 Cawkwell 1981, 51, 53.

48 Cawkwell 1981, 54–55. Both Isocrates' *De Pace* and Xenophon's *De Vectigalibus* attest the impending financial crisis resulting from the costs of the military efforts to regain Amphipolis (commenced 368) and the Chersonese and suppression of the rebellious allies during the Social War (357).

49 See also Isoc. 8.19–21; Dem. 20.24 for descriptions of the dire economic straits which Athens found herself in during this period.

50 Demosthenes (4.16–20) similarly highlights Athens' fundamental reliance on mercenaries to maintain an effective operational fleet, even, as in this case to launch an armament of 50 triremes.

4 Costs of War

Given the inherent difficulties in calculating reliable estimates for Athenian military and naval spending, it is understandable that most ancient historians have steered clear of trying to provide comprehensive figures. Gabrielsen in his *Financing the Athenian Fleet*, despite its title, avoids giving even estimates of total naval costs. He sticks resolutely to citing documented examples of costly naval expeditions and engagements as examples of 'how rapidly enormous sums were being swallowed up by naval operations', before concluding 'the element of unpredictability involved is sufficiently great to discredit modern reconstructions of annual naval budgets'.[51] In a further amplification of this he says 'attempts to calculate the "operational expenditure" of the fleet in the fourth century … tend to underestimate the total costs of expeditions'.[52]

Admitting that providing 'precise figures where so many variables are unknown is impossible', Sammons suggests that between funding her military, administration, political and jury pay, as well as maintaining her maritime and defence infrastructure (*IG* i^3 52A) Athens 'clearly paid out massive amounts of money in the years just before and during the Peloponnesian War', before concluding that it is 'more than conceivable that in several of the war's early years the Athenians expended over 2,000 talents from their income and reserves in the course of a single "fiscal" year.'[53] Likewise Brun accepts that attempting to assess the cost of the known expeditions is a challenge because of the large number of unknowns. However, he does make some calculations based on 'une période mieux connue que d'autres, les années 378–371, marquée par une intense activité militaire athénienne et où il est pour nous aider une grande densité de sources, nombreuses et variées.'[54] For this seven year period his figure for total Athenian military spending is an average of 167.[55] The difficulties in such calculations can be seen from the fact that the figures offered by Brun for the first three years of this period are 60, 17 and 312 talents (average 130T) respectively, while for the same years Wilson calculates different totals of 150, 110 and 292 (average 184)—almost 40% more per annum.[56]

51 Gabrielsen, 1994, 115.
52 Gabrielsen, 1994, 250 n. 18.
53 Sammons 2000, 208–209.
54 Brun 1983, 154.
55 Brun 1983, 158.
56 Wilson 1970, 316.

One of the most thorough exercises along these lines, and covering the same period of the 370s, was published by Robbins almost 100 years ago.[57] Again, because of the difficulties surrounding the data in our sources he readily accepted that 'we can expect to arrive at only an approximation of the truth'.[58] Following Robbins and relying on him heavily for his 4th century analysis, the most comprehensive modern analysis of Athenian military expenditure is provided by Pritchard. As part of his 5th century analysis Pritchard suggests that Athens spent 'between 500 and 2000 talents per year on its armed forces during the Peloponnesian War'.[59] It must also be remembered that this figure is for public expenditure only for which Athens had to borrow from the sacred funds on the Acropolis to supplement her income of about 1,000 talents (Xen. *Anab.* 7.1.27) and it does not include private expenditure by trierarchs which, at an average cost of 4,436 drachmas, would have added a further 74 to 185 talents to the annual total military spending.[60] This private funding by trierarchs helps explain why on occasions expenditure on the navy alone sometimes exceeded total polis fiscal expenditure figures.[61] During the 11 years of the Archidamian War, Pritchard estimates that Athens spent 'an unexpectedly high average of 1,485 talents per year'.[62] That the Athenians were willing to spend such large sums on their fleet is clear from the fact that in 412 they voted to use one thousand talents 'to man a large number of ships' (Thuc. 8.15). The costs of even a modest expedition of any significant duration were substantial, as can be seen from Demosthenes proposal to fit out a small permanent force of 10 triremes, 2000 hoplites and 200 cavalry, which he calculates would cost 92 talents a year (Dem. 4.28–29).[63]

Of necessity, most of the calculations and estimations provided by modern scholarship have been based mainly on the better documented and usually significant expeditions but, as discussed earlier, Athenian naval activities involved

57 Robbins 1918, 378–386, contains the detailed calculations on an annualised basis for 11 campaigns during the 370s.

58 Robbins 1918, 362.

59 Pritchard 2010, 6.

60 Pritchard 2012, 44.

61 Hanson 2005, 262.

62 Pritchard 2012, 43.

63 If anything, Demosthenes sought to understate the costs in order to get his proposal passed as his detailed costings indicate: 'for the ten fast galleys forty talents, or twenty minae a ship every month … that each may receive ten drachmas a month ration-money … the bare rationing of this force'. The sailors were expected to add to their income from booty as is made clear: 'the force itself will provide the rest out of the war, so as to make up their pay.' (Dem. 4.29).

much more than just large-scale engagements at sea. Security and guard patrols were a regular feature of Athenian naval activities with up to 20 triremes on patrol regularly during the 5th century: 'twenty guard-ships and other ships conveying the guards to the number of two hundred elected by lot' (Ath. Pol. 24.3). Wilson argues that similar trireme patrols were a feature of Athenian naval operations from the beginning of the 4th century.[64] These would have been supplemented by the need for regular supply ships to service garrisons (*Hell.* 6.4.1) and bases scattered throughout the Aegean, for instance at Corinth, as confirmed by Xenophon (*Hell.* 4.4.1) and many more in the northern Aegean (*Hell.* 5.1.7).[65] Naval activities involving security patrols around Attica, grain convoy and trade route protection,[66] anti-piracy expeditions, as well as diplomatic and sacred vessel excursions, were all routine activities and would therefore have taken place regularly throughout the eight-months sailing season.[67] Constituting mundane imperial 'house-keeping' these naval activities, though numerous, are rarely included in scholarships' naval expenditure calculations.

For the bulk of the final 80 years of the 5th century, Athens was actively engaged in naval expeditions, and intensely so during the Peloponnesian War. With some exceptions, such as from 386 to 378 she was similarly engaged militarily during the 4th century. According to Diodorus (16.12), for instance, during the Social War Athens had more ships at sea than at any time since the Peloponnesian War.[68] Though naval and military costs would have varied from year to year, few would demur from van Wees' statement that Athenian military expenditure was so large that it 'dwarfed all other public expenditure'.[69]

The calculations of these enormous naval and military expenditures have been conducted, as most of the examples given above illustrate, principally as financial exercises, attempts to assess income and expenditure to derive quasi balance-sheet estimates. What we require for purposes of the assessment of economic performance, however, are crude statistics such as those provided by *The Cambridge Economic History of the Greco-Roman World*, from which it successfully established that 'classical antiquity saw one of the strongest economic

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64 Wilson 1970, 68.

65 Brun 1983, 150–151, who confirms the existence of 'garnisons extérieures: bon nombre de celles-ci nous sont connues.'

66 Hunt 2010, 36–38. On the importance of grain and the protection of its supply. Dem. 20.31 on the significance of Black Sea grain trade for Athenian survival.

67 Robbins 1918, 373–376.

68 Pritchard 2012, 22.

69 van Wees 2000, 81. Pritchard 2012, 57, puts expenditure on religious festivals at 100 talents per annum, 'comparable to the operating costs of the democracy'. For the costs of democracy see also Hansen 1991, 254–255, 315–316.

efflorescences in premodern history.'[70] In this exercise we are seeking to extrapolate plausible orders of magnitude to be able to answer the question as to where on a continuum between 'likely' and 'unlikely' can we place our results. As de Callataÿ points out, we must not fall into the absolutist trap that what is not exactly right is wrong, because what we are really trying to do 'is circumscribe the uncertainties to an acceptable level.'[71] This is particularly the case as our objective is not to provide an annual balance-sheet of Athenian financial income and expenditure, but a reasonable estimate of naval and military expenditure for critical periods to assess their deeper economic consequences. In particular, the multiplier effect of a substantial increase in gainful employment in the monetised naval sector would have boosted effective demand and provided an important stimulus to economic growth.

The optimum effect of a massive increase in effective demand and money supply on economic growth occurs during its initial phase, for Athens this means the 5th century. If we take Unz' figures and apply our 1 drachma pay rate, we get a total naval expenditure of 11,000 talents for the 29-year period 479 to 449. In the light of both Sammons' and Pritchard's criticisms, if we reduce this figure by an arbitrary one-third but add in 240 talents per annum (40 ships × 6 months) for routine and security naval duties not taken into account by Unz, we get a total of 14,293 t. or an annual average of 493 t. For the following almost two decades (during the Thirty-Year Peace and the so-called Peace of Callias) until the Peloponnesian War, public expenditure is likely to include 240 t. for routine naval patrols, 100 t. for jury pay and a significant but unquantifiable amount for the Periclean building programme, a labour-intensive exercise in which the Parthenon alone cost almost 500 t. For this period the combined cost of delivering the public goods of defence, functioning courts and a polis building programme could easily have been an annual 400 t. For the Peloponnesian War itself we have annual figures of between 500 and 2,000 talents from Pritchard, with the higher figure suggested by Sammons for at least some of the years, on which basis an annual average for military spending in the order of 800 t. is within the bounds of possibility. For the 4th century, while naval warfare was far less intense, it is noteworthy that the by the start of the 3rd quarter the fleet had been restored to its Salamis level of 200 and was to surpass its 5th century size during the last decades of the 4th century (see Table 2). So to summarise, Athenian public expenditure during the 5th century (of which naval spending was the largest component), the critical phase that laid the founda-

70 de Callataÿ 2014, 20.

71 de Callataÿ 2014, 9.

tions for Athenian demand-led growth, we have the following estimated annual averages for the three periods: 500 t., 400 t., and 800 t., figures which could easily translate into gainful employment for between approximately 9,500 and 19,000 for a year.[72]

5 Ancient Athenian Keynesians

One of the principal objectives of this book is to offer an economic explanation for ancient economic behaviour, and in particular to identify what lay behind the economic growth of classical Athens. The difficulty is that standard modern economic growth theories do not fit the patterns of the development of classical Athens. Technological innovation is deemed to be essential to modern economic growth. Though it was not absent from the ancient Athenian economy, it was not a primary driver of its economic growth.

Macroeconomics was a signal development in 20th century economics and J.M. Keynes was one of its leading pioneers.[73] A central tenet of modern economic theory is that the limiting factors to economic growth are productive capacity and supply, so-called 'supply-side' economics, in which consumption or demand is a secondary consequence. This is epitomised by Say's Law which was summarised by Keynes as 'supply creates its own demand',[74] a concept which Keynes completely inverted by proposing that demand creates its own supply.[75] Keynes developed his theory as a basis for a policy response to the exigencies of the Great Depression, but it can also be used as a conceptual framework to provide an explanation for historical events in antiquity, especially where economic development was constrained by structural unemployment.

In the 1930s mass unemployment depressed demand which compounded the recession and could only be solved, according to Keynes, by massive state spending to boost demand. Following the 2008 financial crisis governments across the Western world also resorted to state intervention through an unpreceded policy of quantitative easing (printing money) in an effort to boost depressed consumer demand. In classical Athens, massive naval expenditure

72 A rough estimate based on 1 drachma per day for 252 working days (6-day week and allowing for 60 days' religious festivals). Flacelière 2002, 130.

73 Samuelson, 1995, 384, said that economics has not 'been the same since Keynes' great discovery'.

74 Keynes 1936, 18.

75 Malabre 2003, 182.

provided a similar economic stimulus which would have helped to inaugurate a demand-led economic efflorescence. Keynes' theoretical framework is thus ideally suited to analysing the political economy of classical Athens because at its heart the factors of production were replaced by fiscal stimulus as the means of creating demand-led growth, an undertaking more easily implemented in an economy in which the state played a decisive role.[76]

Modern economic theory assumes that production and technological innovation are the foundations of economic development in an environment in which scarce resources are allocated through markets.[77] Keynes shifted the emphasis away from scarcity, arguing that money, interest rates and demand were the important determinants of economic development in certain circumstances and, in an important departure from macroeconomic orthodoxy, emphasised the key role the state could play as an economic actor in promoting demand, both directly and indirectly.

The importation of grain was the most significant factor in Athens escaping from the Malthusian constraints which would have otherwise severely constrained its economic development. Just as importantly, grain imports on this scale would have freed up considerable agricultural labour to participate in the naval economy. It was Braudel who emphasised the transformative effects that this largescale grain importation had in Athens: 'This cheap foreign grain was itself a kind of revolution whose meaning is clear. It was a revolution, since imported grain reduced what an economist would today call the activity of the primary sector, never very profitable in itself.' Braudel further commented that the far-reaching consequences of these grain imports on the political economy of Athens were similar to what happen later in early modern Europe: 'Holland in the seventeenth century ad (sic) embarked on its golden age only when it started to import Baltic grain in large quantities. That is why the grain trade was revolutionary: it modified the structures of the Greek economy and subsequently those of society.'[78] The enormous increase in polis naval demand provided substantial paid employment in this non-productive sector, thus severing the link between Athenian economic growth and agricultural productivity and setting the stage for the emergence of a new

76 Warburton 2003, 368–369.

77 Mankiw 2010, 221–229. Mossa 2016, 22. Innovation is assumed to be normatively positive, an assumption disproved in spectacular fashion by the 2008 financial crisis, in which the financial innovations of the previous decade such as CDO's, so-called exotic Options and sub-prime mortgages turned out to be 'the financial equivalent of weapons of mass destruction.'

78 Braudel 2002, 263.

Athenian macroeconomic paradigm. Through the visible hand of the polis the unprecedented naval expansion programme massively boosted aggregate demand, and in this way, the Athenians became the world's first, if accidental, Keynesians.

It was through his analysis of economic history that Keynes concluded that the evidence contradicted the orthodox assumption that the invisible hand would automatically bring the economy into balance and that Says' Law, 'supply creates its own demand', was an historical anachronism.[79] By stressing the criticality of aggregate effective demand rather than production (supply) Keynes turned the traditional Smith-Ricardo-Say economic orthodoxy on its head.[80] In the absence of private investment, Keynes' model provided theoretical justification for intervention by the state in the economy. Thus, the issue of demand and the role of the state in providing this demand, are the essential aspects of Keynes' theory which go a long way to explaining the seemingly aberrant phenomenon of classical Athenian economic growth.

We have seen that markets and prices played a central role in the functioning of the economy not only of Athens, but of the wider Aegean region. Yet claims of the absence of market exchange persist in tandem with a complete failure to offer any convincing evidence for the allocation of resources through either of the other posited alternative mechanisms, reciprocity or redistribution.[81] The denial of market exchange in ancient societies has also fostered the notion within ancient historiography that modern economics has little to offer as an analytical methodology for such societies. As the discussion in chapter 1 illustrates, economics and ancient history have made uneasy bedfellows and attempts at breaching the temporal boundaries between ancient history and modern economics have often been seen, up until recently, as being in some way transgressive. Recent scholarship on Greek economic growth and the ubiquity of functioning markets has, hopefully, rendered recursive debates on the existence of these concepts no longer necessary.[82] The ending of the deep scepticism of the application of economic analysis to the political econ-

79 Keynes 1936, 18.

80 Marshall 1922, 89. Provides a classical articulation of the concept in which the economy is driven by, 'new activities giving rise to new wants, rather than of new wants giving rise to new activities.'

81 Horden, Purcell 2000, 606. Insists on an embedded economy in which the allocation method was redistribution and spurn any reference to the concept of market exchange.

82 A number of important works have been published within the past two years which when taken together should finally render the sterile oikos debate obsolete. See Acton 2014; Ober 2015; Harris et al. 2016; and Bresson 2016.

omy of classical Athens, which has been such a feature of ancient historical scholarship to date, should also facilitate more historically grounded accounts of economic behaviour in antiquity.

Central to neoclassical economic theory, especially as promoted by modern economists such as Schumpeter, is that growth is a function of increased productivity promoted by technological innovation.[83] This widely posited modern association between technological innovation and economic change has been applied to the ancient economy and, finding little evidence for innovation in the predominantly agricultural economy, ancient scholarship assumes economic growth to be an impossibility. On the crude application of what pertained in the modern economy to ancient societies the absence of extensive innovation was taken as *prima facie* evidence for a stagnant no-growth economy. As we have seen, ancient economies such as classical Athens were subject to the vicious circle of standard Malthusian dynamics. In these conditions, sustained economic growth was fundamentally constrained by the limits of agricultural productivity. For Athens from at least early in the 5th century, if not before, even this was not an option as the carrying capacity of Attica was insufficient to sustain a growing population and so it became a net importer of grain.[84] The only method by which such an economy could escape from this deleterious cycle and to have a prospect of economic growth was to increase non-agricultural employment and that included unproductive labour.[85]

Finley adopted this neoclassical approach to technology having satisfied himself that technology was not exploited for productivity gains and that there was, at times, even active resistance to labour-saving technology. To illustrate the ancients' attitude to the use of technology, Finley cites an incident recorded by Suetonius in which the emperor Vespasian declines to use a labour-saving device in favour of employing direct labour on the basis that, 'I must always

83 Chaudhuri 1989, 11–12.

84 Moreno 2012, 32, estimates that Attica could support a population of between 52,000 and 106,000. Garnsey 1988, 104 argues for a figure 'in the region of 120,000–150,000 people … under normal conditions.' Bresson 2016, 409–410, suggests that 'by the sixth century at the latest, Athens had entered the cycle of external dependency', and that grain production in Attica could sustain no more that 20% of the 5th century population and 27% of the 4th century. *Contra* Garnsey 1988, 105–106, who argues that 'a serious disequilibrium between Athens' food needs and its capacity to meet them did not develop until well into the post-Persian-War period.' With support from Morris 1994, 361.

85 Smith 2007 [1776], 212. Adam Smith distinguished productive and unproductive labour not on its usefulness or importance but on whether its product was saleable or not, as the example he cites indicates: 'The sovereign, for example, with all the officers both of justice and war who serve under him, the whole army and navy, are unproductive labourers.'

ensure that the working classes earn enough money to buy themselves food' (Suet. *Ves.*18).[86] The ancient economy lacked extensive technical innovation and what technological development there was does not appear to have been economically decisive in terms of overall growth, however, this incident may well be illustrative of a more important ancient economic reality. It should also be seen as a perceptive recognition by Vespasian of the real needs of his subjects, which was not for 'productive' employment but for paid employment—a very early example of a Keynesian attitude to the significance of gainful employment in creating effective demand and creating a pathway to economic growth.[87]

This is precisely what happened in Athens because of events during the 6th century, the emergence of the polis, the development of democratic institutions under Cleisthenes, the advent of a polis navy, extensive monetisation and fiscal expansion: a constellation of institutions which quickly transformed its political economy. In politico-military terms, the transition from tyranny to democracy is seen as a singularly important event, a view expressed most ardently by Herodotus: 'Although Athens had been a great city before, it became even greater once rid of its tyrants.' (Hdt. 5.66.1). The emergence of the Athenian polis was also a decisive event in terms of economic history, as the transition from a largely privately owned penteconter based fleet to a state-owned trireme fleet commenced virtually in tandem.

The emergence of the Athenian polis navy triggered a virtuous economic cycle which 'created a demand for expert labour that must have removed the labour force from agricultural production, increasing the demand for agricultural labour and the market for agricultural goods'.[88] Osborne also highlights a further economic benefit which, counterintuitively, resulted from the imposition of taxation to fund naval expenditure, 'higher productivity if living standards were to be maintained'.[89] As one of the few ancient historians to give credence, specifically, to the economic implications of increased naval expenditure Osborne concludes, 'All these effects will have been individually tiny,

86 Finley 1981, 176–195.

87 Keynes 1936, 131, 129. Keynes put the same idea in his inimitable manner, as follows: 'Two pyramids, two masses for the dead, are twice as good as one; but not so two railways from London to York.' And again, 'Pyramid-building, earthquakes, even wars may serve to increase wealth.'

88 Osborne 2010, 112.

89 Osborne 2010, 112, specifically alludes to tribute paid by the allies but increased financial burdens on trierarchs and the imposition of eisphora would have similar economic productivity benefits in Athens itself.

but cumulatively not without significance.'[90] The macroeconomic impact of the increase in public expenditure created unheralded levels of demand which would have been the primary catalyst for the economic transformation of classical Athens. To understand the full impact of this we must appreciate that the polis navy constituted a sector of paid employment on an unprecedented scale in a recently monetised economy, and that this was the source of the remarkable increase in effective demand—demand backed by income, measured in money.[91] The constraint imposed on economic development by underemployment in subsistence agriculture was removed by the provision of a novel alternative, paid employment in the navel sector. In this context, the key variables which laid the macroeconomic economic foundations for this economic efflorescence all began to emerge within the last decades of the 6th century and included: polis formation, a polis navy, extensive monetisation and fiscal tax impositions.[92]

Growth theory has been a defining feature of economic analysis since Adam Smith for whom economic development derived from enhanced productivity as a result of increased specialisation.[93] But Smithian growth was finite: 'In a country which had acquired that full complement of riches which the nature of its soil and climate … allowed it to acquire … (it) could, therefore, advance no further.'[94] This pessimistic attitude as to the limits of growth became an integral aspect of classical economics epitomised by Ricardo, whose theory of diminishing marginal returns acquired the status of a virtual law of nature which precluded a prosperous future for mankind.[95] The unfolding of the Industrial Revolution with its extensive pattern of recurring growth, however, confounded the forebodings of the classical economists and prompted a new theoretical dawn of sustained economic growth based on invention and innovation, pro-

90 Osborne 2010, 112.

91 Keynes 1936, 23. In technical terms, effective demand is where the aggregate supply and demand functions intersect. The central importance of this concept for Keynes' whole theory is made clear from the sentence immediately following this definition: 'Since this is the substance of the General Theory of Employment … the succeeding chapters will be largely occupied with examining the various factors upon which these two functions depend.'

92 With no central bank or equivalent mechanism, and monetary supply effectively dictated by silver production, Athens could not be said to have had a monetary policy—its money supply was effectively controlled by private mining entrepreneurs. There was a reserve accumulation held in the Acropolis but it was not generally used for current spending except in an emergency. (Thuc. 2.13.3–4, 2.24).

93 Smith 2007 [1776], 3–8.

94 Smith 2007 [1776], 62.

95 Wrigley 2000, 128.

mulgated especially by Schumpeter.[96] In this, the modern increases in both aggregate and per capita income are largely attributed to technological innovation, Schumpeter's 'perennial gale of creative destruction'.[97] More recently this binary approach to economic history in which post-industrial growth is contrasted with pre-modern stagnation has come under increased scrutiny.[98] In this reassessment some argue that economic growth was a universal feature of all past societies in which economic development occurred gradually in tandem with population growth.[99] The growth theory pendulum was now swinging decisively in the opposite direction and the positing of universal growth was in danger of eliminating the texture, colour and nuance of economic history, rooted in contingent circumstances.

The prevailing subsistence agriculture of Athens up to the end of the 6th century was characterised by underemployment, and with little non-agricultural employment available, incomes were low and at the macro level a significant social surplus would have failed to materialise. As we have seen, from at least the early 5th century, Athens was a net importer of gain paid for with its considerable supplies of the Aegean's most valuable internationally recognised commodity, silver. The comparative advantage of the Black Sea region, Sicily and Egypt in grain production served to satisfy substantial portions of Athenian primary food requirements, creating a pan-Aegean market in grain. In advance of the advent of naval pay and pay for jury and Assembly attendance, effective demand would have been low as few had liquid purchasing power. Once the naval economy began to take off in earnest from the early 5th century it had two important effects which had compounding economic benefits. First, significant effective demand became an economic reality for the first time. Second, under-utilised rural labour gained employment in the urban-based naval economy thereby reducing agricultural under-employment—a de facto increase in agricultural productivity.

Thus, the political economy of Athens received a positive economic stimulus on two fronts: increased gainful employment in the expanding naval sector and greater productivity in the established agricultural sector. Additionally, the

96 Schumpeter 1983, 57–94.; Freeman 1982, 211–214; Aghion 2004, 1–25, provides a modern interpretation of the Schumpeterian growth model.

97 Schumpeter (1994) [1942], 82–83. Mokyr 2003, 27, confirms the pre-eminence of technology in modern growth theory: 'The new growth economics has restored technological progress to the center of the debate about why economic growth occurs.'

98 de Vries 2001, 193, argues there was extensive Smithian and Schumpeterian growth 'in both the pre-industrial past and the modern present'.

99 Cameron 1993, 8. Two of the most prominent remaining adherents of the dichotomous ancient/modern growth patterns are, Landes 1998 and Diamond 1997a.

wider Aegean economy would have benefitted from the growth in regional trade, especially in grain. It should also be noted that this market relied on entrepreneurial grain-traders seeking profitable opportunities for its successful operation, and was never a polis run enterprise, however, the Athenian navy was extensively deployed in protecting this essential trade and the merchants who plied the grain routes. As with all such trade, prices were set by the market and not by the state through administrative practice. What is important to understand in the exchange scenario just outlined is that it was not Black Sea, Sicilian or Egyptian supply that was the critical factor, it was the development of effective demand in Athens that was the catalyst in establishing this interregional trade and which kept it functioning for well over one hundred and fifty years.

It was also demand-led growth derived from the enormous levels of polis investment in both naval infrastructure (chapter 9) and, more importantly, the establishment of a large-scale pool of paid labour that created the prosperity of classical Athens. In the classic Keynesian framework, this was economic prosperity derived from a process of state-sponsored demand stimulus. Needless to say, these were not productive investments, the labour involved in what can be considered public works was thus gainfully but not productively employed, a novel insight by Keynes and anticipated by Emperor Vespasian. Economic growth in Athens was constrained not, as standard supply-side economics postulates, by a scarcity of goods but by a scarcity of effective demand as argued by Keynes. This of course is not to suggest that the Athenian efflorescence that resulted constituted a precocious, if relatively short-lived, 'birth of capitalism': in Braudelian terms, this was commerce not capitalism, the workings of a market exchange economy not a capitalist market economy.[100] The concept of effective demand clearly implies a capacity to generate finance to fund the wages, but as classical Athens could not resort to deficit-spending (borrowing from global markets) to fund its naval expansion programme, it had to rely on silver production, tribute and a novel public-private partnership with wealthy trierarchs for its funding.[101]

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100 Since the financial crisis of 2007/8, Keynesian 'demand' economics is back in vogue, with many governments considering everything from quantitative easing to so-called helicopter money to try to revive global demand. This is putting money (non-productively) into the hands of those who otherwise would not have any, precisely what was achieved through large-scale paid employment in Athens' naval economy.

101 This type of finance for both infrastructure and current spending is fundamentally different from the type of capital accumulation required by modern capitalist economies to create recurring growth.

Conclusions

I have endeavoured to demonstrate that, contrary to a long-standing academic orthodoxy, a vibrant and expansive economy existed in classical Athens, one that continued to thrive throughout the democratic period 508–323 BC.[1] The celebrated Athenian imaginative genius that sought innovation and novelty in art, sculpture, architecture, language, music, politics and administration was not lacking when it came to economic matters. Following the pattern set by the 'Father of History', Herodotus, and his immediate successor, Thucydides, the military, political, and diplomatic ramifications of the rise of the Athenian superpower have been central preoccupations of modern scholarship. However, the role played by the Athenian navy in providing the economic foundations for the prosperity of classical Athens has not been a significant feature of classical scholarship to date. The economic consequences of the profound re-ordering of its defence strategy by the emerging democracy have received insufficient attention from both ancient and modern scholars alike.

The oikos debate on the ancient economy was intense, protracted and very divisive. In its latter stages there was an attempt at a partial reconciliation between the formalists and substantivists which failed to extricate the debate from the 'conceptual rut' in which it had become mired.[2] The debate, and its subsequent manifestations, show that there were broadly three approaches to ancient economic history; culturalist/anthropologist (primitivist-substantivists), conventional economics (modernists-formalists), and post-structuralist/modernist (literary). When the extraneous elements are excluded, the essential difference between these approaches to the ancient economy is what each considers to be the primary motivation for human behaviour in economic matters. The motivational continuum underlying these approaches has a broad spectrum, ranging from status-seeking through selfishness to altruism. The primitivist model with its reliance on status-seeking is wholly inadequate as a mechanism to explain the vitality and complexity of a society like classical Athens. Likewise, the modernists' use of neoclassical economics, with its motivational priorities of profit and utility maximisation, suffers from fatal short-

1 This book is based on my PhD thesis written between 2011 and 2015. Since then three major works on the ancient Greek economy have appeared; Ober 2015, Bresson 2016, and Harris et al. 2016. In combination, these have radically altered the direction of travel of the debate on the ancient economy towards one with which this work is substantially aligned.

2 Saller 2005, 223.

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comings as an analytical tool for economic history (both ancient and modern). Finally, the post-structuralist/modernist approach considers all economic phenomena to be culturally determined.

The methodological framework I have employed is based primarily, though not exclusively, on institutional economic analysis. In doing so, my objective was to yield a better understanding of the emergence, persistence and evolution of institutions which underlie the Athenian political economy, providing a critical link between its present, its future, and its past. More specifically, this institutional framework has provided invaluable insights into the centrality of the Athenian navy in the development of the political economy of classical Athens—an important aspect of Athenian economic history which other analytical frameworks have tended to either understate or overlook.[3]

For well over a generation, Moses Finley has cast a long shadow over the oikos debate on the ancient economy. A formidable scholar with a prodigious publication record, Finley set the agenda for the study of the ancient economy. In a recent somewhat hagiographical account commemorating Finley's birth centenary, his work is described as having had a transformative influence on the study of ancient history, which is undoubtedly true. However, the claim that 'the influence of his work was in the main benign'[4] is not one that would be universally accepted. Finley's Marxism largely determined his view that the ancient economy was primitive, part of historical materialism's concept of the evolution of society through various historical stages; primitive communism, slavery, feudalism, capitalism, and finally socialism. The height of Finley's academic career coincided with an increasingly fraught international political atmosphere as the Cold War was reaching a crescendo, which added a contemporary ideological stimulus to his ancient historical work.

Finley's and the primitivists' privileging of status as the primary motivational force in the ancient economy and its concomitant denial of the role of long-term self-interest is also problematic. It would seem mundanely obvious that the pursuit of private gain existed in primitive societies, while the pursuit of prestige, status and fame are self-evidently not absent from modern economies. As I have argued throughout this book, classical Athenians accepted the pursuit of material self-interest as a fundamental part of human nature and, rather than deny it, they sought to harness it to the collective benefit of the polis. It is the primitivists' conception of human nature which, more

3 Kallet-Marx 1993, provides an extensive treatment of the financial aspects of the role of the navy. Kallet L. 2013 widens the analytical lens, but the enormous macroeconomic implications receive inadequate attention.

4 Harris W.V. 2013, 1.

than anything else in my view, has added to the debate's longevity and contributed to its irresolution. As a result, there has been considerable stagnation in the discipline of ancient economic history for almost a generation, an outcome which cannot be described as benign. It is only within the last decade and a half that ancient economic history has begun to emerge from the Finleyan penumbra.

But lest this be considered an exercise in dragon slaying; it is not. The other side of the oikos debate, the modernist-formalist, bears equal culpability for the current impasse. Ancient economic history has been bedevilled by a set of twin handicaps. For most economists, the ancient past is indeed another country while few ancient historians incorporate economic analysis in their work, finding analytical frameworks based on anthropology, sociology and culture far more congenial than that of the dismal science. The evolution of economics as a discipline has not helped matters. Adam Smith's classical foundations were increasingly mathematicised, and his problem-focused art of political economy was transmuted into the theoretical science of economics. Economics became focused on static equilibria with unique capabilities for analysing economic phenomena at a point in time. But important real-world variables were assumed away (considered exogenous, in the jargon) and, in the process, economics lost its all-important temporal dimension. When Smith's behavioural assumption of self-interest became fused with 'economic rationality', a new neoclassical sub-species evolved—*homo economicus*. Perfectly adapted to the rarefied environment of theoretical economic modelling, the behavioural assumptions of *homo economicus* are of dubious analytical value to economic historians.[5] In an effort to escape the current epistemological hiatus, apart from a new analytical framework, my approach admits a more complex set of human motivational behaviours than that offered by either the status-seeking of the primitivists or the rational maximisers of the neoclassical model.

The Athenian Empire founded on sea-power is Thucydides' central theme, one overwhelmingly adopted by modern commentators. The vast bulk of scholarship to date has focused on the political and military history of Athens in which the concept of empire has been centre-stage. Its unremitting 5th century focus has been further constrained by the primitivists' denial of an economic sphere. I have tried to challenge this narrow periodisation by arguing for the

5 Stiglitz 2010, 249; 'Most of us would not like to think that we conform to the view of man that underlies prevailing economic models, which is of a calculating, rational, self-serving, and self-interested individual. There is no room for human empathy, public spiritedness, or altruism ... Unfortunately, economists have pushed their model of rationality beyond its appropriate domain.'

importance of the 6th century, the late archaic transition, as the location for the initial emergence of key institutions. Many of these became defining features of classical Athens, including *inter alia*, democracy, coinage and monetisation, and of central importance here, the navy. Notwithstanding the genesis of its principal enabling institutions during the 6th century, it was the rapid expansion of the navy during the early part of the 5th century that was instrumental in determining the subsequent structure, performance and trajectory of the political economy of Athens for over a century and a half. The enhanced economic analytical framework of the political economy of classical Athens, including the navy's institutional origins during the late archaic transition, has confirmed one of the primary insights of new institutional economics: that institutions play a central role in determining economic performance.

The 6th century witnessed the development of intense commercial competition among the major Greek maritime states from mid-century onwards. It was accompanied by military rivalry that soon escalated into an arms-race in which triremes, the world's first dedicated warship, became the ship-of-the-line for the leading naval poleis of Greece. Warfare, heretofore principally about territorial disputes with neighbours and based on confrontations between phalanxes of hoplites, underwent a fundamental transformation as the number of naval battles escalated. In this highly competitive atmosphere, the emerging maritime power of Athens set about emulating its rivals by adopting the new naval technology of the trireme and establishing an institutional framework to finance and administer its new naval departure. In this way, the groundwork was laid for an escalation of the nascent 6th century naval adventurism which, by the end of the first quarter of the 5th century, had transformed Athens into a naval hegemon. The scale of this unprecedented naval expansion, and the financial resources it consumed had a metamorphic impact on the political economy of classical Athens.

The audacious scale of this naval undertaking is further emphasised by the concomitant investment in naval and defence infrastructure by Athens. To support its burgeoning fleet required a massive and continuous infrastructure building programme which included; the enormous defensive fortifications at Athens and Piraeus and the Long Walls connecting Athens to its newly constructed naval headquarters at Piraeus, complete with its extensive shipsheds, harbours and dockyards. All of which was designed to support and maintain its extensive fleet of triremes which at times numbered 400 and rarely fell below 200 throughout most of our period. Athenian triremes, with their complement of 200 sailors each, represented an unprecedented investment in manpower and money. The scale of this naval investment was comparable to that of some of the wealthiest maritime states of the later Renaissance period. In 1295, for

example, Genoa, is said to have 'put to sea the largest fleet ever launched by any Italian city: 165 galleys with 35,000 men.'[6] We have extensive source evidence confirming that Athenian expeditions on this scale were a regular feature of Aegean naval warfare for over a century and a half. The assiduous manner in which Athens pursued its drive for naval supremacy is also exemplified by its persistent efforts, both military and diplomatic, to secure its access to vital supplies of naval materials such as timber.

The primitivist position has been summarised best by its most prominent proponent, Finley: 'Technical progress, economic growth, productivity, even efficiency have not been significant goals since the beginning of time. So long as an acceptable lifestyle could be maintained, however that was defined, other values held the stage.'[7] From the evidence for classical Athens adduced here, this statement is invalid in virtually every respect, but especially with regard to technical progress, economic growth, and prevailing values. As has been argued, the dynamic strategies available to the poleis of ancient Greece were principally colonisation, conquest or commerce. The most successful poleis, such as Athens, adopted a dominant strategy and invested heavily in the necessary physical infrastructure and human capital required for its implementation. Having adopted its strategy of naval conquest, Athens directed its technological innovation efforts in precisely the direction best calculated to advance this strategic objective, nautical innovation for which extensive evidence has been adduced in chapter 8. As with all investments this was a conscious decision to forego present consumption in the expectation of future gains in the form of better material standards of living. In macroeconomic terms, such strategic investments can result in increases in GDP per capita. More recent ancient scholarship offers considerable evidence that in relation to GDP, the leading indicator for economic prosperity, its levels in classical Athens were on a par with those of early modern Europe, and like many of these European states the engine of growth for Athens was its naval economy.

An important corollary is also true. Having no comparative advantage in the production of grain, there was little incentive for the Athenians to invest in technical innovation in the agricultural sector and every incentive for them to import their requirements, which is what they did increasingly throughout the 5th century. The claim by Mokyr that the ancient Greeks had 'no interest in growth' because they did not adopt technological innovation as the dominant strategy is excessive.[8] Rather, they adopted dominant strategies which they

6 Dotson 2001,118.
7 Finley 1985, 146–147.
8 Mokyr 1990 19.

considered offered superior economic returns. It was the adoption of naval conquest that enabled Athens to enjoy unprecedented inflows of wealth and transcend the economic limitations of what, up until then, had been an economy and society largely based on little more than a Neolithic agricultural paradigm.

To be fair to Finley and the primitivists, their conclusion that both technological change and economic growth were uniquely modern phenomena are drawn directly from neoclassical economics, in which they had become veritable articles of faith. Modern economics considers economic growth, an increase in the average standard of living, to be a function of one, or a combination of, technology, economies of scale, and specialisation. But technological change is not uniquely required as a determinant of economic growth. The evidence adduced in this analysis suggests that, as rational economic decision-makers, the classical Athenians did not invest in technology development willy-nilly. Instead, they invested heavily in their chosen dynamic strategy of conquest—as valid a means of increasing material living standards in the ancient world as technological investment is in the modern world. To explain these different economic growth outcomes there is no requirement to ascribe a set of aberrant behavioural motives to classical Athenians, or to seek evidence of technological innovation other than within the context of their chosen dynamic strategy.

Invention is fundamentally distinct from innovation—the application of ideas in the real world. For the classical Athenians, technological invention was not their forte but, like the modern Japanese, they excelled at innovation in their chosen areas of competence. So, for Athens, we should look for technical and institutional innovation in the waging of war as well as in fostering commerce, for which, there is an abundance of evidence. While many modern scholars have recognised the fact that significant technological innovations occurred within the field of military equipment and machinery they have expressed puzzlement that this capacity for technical innovation was not applied in the wider economy.

Mokyr for instance comments that 'it is worth noting that Greek and Roman military technology provides one of the few areas of a successful collaboration between sciences and technology' but concludes, 'the question remains why so little of this potential was realised, and translated into economic progress.'[9] This belies a fundamental failure to recognise that the substantial investment made by the classical Athenians in military technology and infrastructure was done to facilitate their conquest strategy through which they expected to max-

9 Mokyr 1990 21–22.

imise their material advantage. Just as with Finley and the primitivists, Mokyr equates economic growth with technical progress, and takes the absence of the latter in the general economy as evidence for the absence of the former in classical antiquity. This is an imposition on the past from modern experience where technological innovation has been the dominant dynamic strategy since the Industrial Revolution. Throughout history, in varying economic circumstances, technological change is not the only, and may not even be the most efficient, means of generating economic growth. The difference between the modern world and that of classical Athens centres on the strategies deployed by each; the objectives remain the same for both—the maximisation of material advantage.[10] From all this we can sensibly conclude that in this competitive environment, technology played an important role as a supportive sub-strategy which was strategy-facilitating rather than growth-inducing per se.[11] At the same time as supporting the dominant conquest/defence strategy, technical and organisational innovation in the naval sector also contributed to economic development within the overall economy by, for instance, attracting surplus labour from the less productive agricultural sector.

For classical Athens this strategy necessitated a decision to defer immediate consumption of its newly acquired social surplus and use it instead to make an unprecedented investment in both military hardware and the infrastructure of war. This was a rational economic choice done in the expectation of returns that would ultimately justify the investment. In terms of conquest, the rate of return included some or all of the following: an increase in the supply of relatively scarce labour in the form of slaves, fixed capital and land, treasure and increased taxes imposed on the conquered territories. But what was unique about these Athenian decisions was not their underlying economic rationalism, but the fact that they were made in open debate by the democratic citizen body. For the first time in recorded history, a popular assembly voted to eschew short-term consumption in favour of a long-term strategic investment with very significant risks. While the initial impetus for Athens to adopt this dominant conquest strategy may have been a defensive one, its offensive potential as a means of creating an empire, though undeclared, could hardly have gone unnoticed.

An overriding observation is that the Athenians possessed a seemingly innate capacity for institutional innovation, including all aspects of their polit-

10 Snooks 1996, 253.

11 Snooks 1996, 239–241. It must be remembered that technology as a dominant strategy leading to technological paradigm shifts only applies to the modern era of the Industrial Revolution.

ical economy. The principal institutions which were developed in the late 6th century were employed extensively to facilitate the unprecedented 5th century naval expansion. As Athens made the 6th century transition from a privately owned penteconter fleet to a polis owned trireme one, a new institutional mechanism was needed to provide sustained funding for this new naval departure. The institution of trierarchy, wholly compatible with the long-standing aristocratic tradition of public munificence, became a public-private partnership designed to deliver classical Athens' most important public good—a large, fully funded and crewed modern fleet (chapter 7). Throughout the 5th and 4th centuries, trierarchy underwent major modifications as the evolving economic and naval circumstances demanded. As an institution, trierarchy's success in this regard is due to it having both short-term stability and long-term flexibility. Combining subtle elements of obligation and voluntarism, trierarchy was an Athenian solution to an Athenian public policy provision problem, designed to function within the political framework of a direct democracy.

We must also address conclusions arising from the last part of the Finley quote above, that 'other values held the stage'—primitivist short-hand for the absence of market exchange in classical Athens. As we have also seen, despite inhabiting a Malthusian world, classical Athens experienced a period of remarkable economic prosperity. The driver of this economic development was the evolution of an unprecedentedly large navy which helped propel the Athenian political economy beyond its Malthusian constraints. This singular economic efflorescence took place within an institutional framework characterised by a high degree of institutional innovation and flexibility which was instrumental in reducing transaction costs. But with respect to the most contested aspect of the whole debate on the ancient economy, the transactional exchange mechanism through which it was delivered, the accumulated evidence presented here points conclusively to market exchange as the principal mechanism. Extensive evidence has been adduced for the prevalence of market exchange even within the relatively narrow field of the naval economy. Functioning commodity and factor markets have been shown to exist for the delivery of critical supplies of both materials and labour for the fleet. Though there is evidence for all three of Polanyi's exchange mechanisms, reciprocity, redistribution and market exchange in classical Athens, that evidence clearly indicates that market exchange predominated and was the institutional foundation of its naval economy. This, in turn, draws attention to the preeminent role which the navy played in determining the structure and performance of the political economy of Athens: a striking finding in the context of the moribund oikos debate.

In their attempts to divine the future direction of modern economies, the 'tea leaves' that modern economists pore over endlessly are data on consumer spending. This is because expenditure by consumers is the single largest component of GDP, typically representing up to 70 % of all economic activity. In this respect, the expansion or contraction of consumer spending is a leading indicator of overall economic performance. Because economic growth is strongly correlated with how much consumers spend on goods and services it is a critical consideration in assessing the performance of the political economy of Athens, in which, for a variety of reasons, it is likely to have played an even greater role than in modern economies.

Though he referred pejoratively to the 'market mob' (*agoraios ochlos*), Plato gives an idea of the extensive range of goods and services which were provided through market exchange in Athens: 'houses and garments and shoes, will no longer be confined to necessities, but we must set painting to work and embroidery, and procure gold and ivory and similar adornments, must we not? … the entire class of huntsmen … poets and their assistants, rhapsodists, actors, chorus-dancers, contractors—and the manufacturers of all kinds of articles, especially those that have to do with women's adornment … Don't you think that we shall need tutors, nurses wet and dry, beauty-shop ladies, barbers and yet again cooks and chefs? And we shall have need, further, of swineherds … and we shall also require other cattle in great numbers if they are to be eaten, shall we not?' (Plato, *Republic* 2.372b–373d).

Clearly, this was an economy based primarily on the widespread circulation of goods and services. In such an economy, just as today, effective demand in the form of consumer purchasing power largely set the upper limit to aggregate demand. Prior the advent of the economic stimulus engendered by massive naval expenditure, the social surplus of the wealthy elite and how they spent it would have had a disproportionate impact in determining aggregate demand. However, naval expansion, with its consequences of increased monetisation and expansion of the money supply, made goods and services more readily available to a numerically vastly expanded market of non-elite citizens and metics (even slaves), many of whose wages were above subsistence level, especially craftsmen whose 'elevated levels of real incomes merit especial attention'.[12]

Braudel, one of the 20th century's foremost economic historians, considered markets to be a universal form of social economic system with a lengthy lineage.[13] His three volume *Civilization and Capitalism 15th–18th Century* is rarely referred to in the debates on the ancient economy, though it contains inter-

12 Scheidel 2010, 442. See also Harris 2002.

13 Braudel 1985, 23–35, 224–225.

esting analytical categories of historical markets in which he differentiated a triad of economies: local autarkic economies, market exchange economies and capitalist market economies. It is a categorisation which, if adopted by ancient historians, would provide an important corrective to the widespread Polanyi-derived assumption that markets either did not exist or did not play an important role in ancient economies: assertions which helped spawn and sustain the largely sterile Oikos debate.[14]

Though Finley seems to have accepted the overwhelming evidence for the existence of markets, it was not an unqualified endorsement of the significance of market exchange: 'But what if a society was not organised for the satisfaction of its material wants by "an enormous conglomeration of interdependent markets"'? To which he immediately answered: 'It would then not be possible to discover or formulate laws of economic behaviour, without which a concept of "the economy" is unlikely to develop, economic analysis (would be) impossible.'[15] The difficulties many ancient historians have had in accepting the prevalence of markets is noted by Holladay: 'as historians, philologians, and archaeologists, we have simply all been locked into Karl Polanyi's deceptively simple notion that, somehow, the ancient world operated under an entirely different set of economic rules than the modern: in two words, "marketless trade".'[16] The primitivist acceptance of extensive international trade in commodities while simultaneously denying a significant role for market exchange, without providing credible evidence for any alternative institutional exchange mechanisms, has some considerable difficulties; not least in logic. Contrary to such claims, there is extensive evidence that the Athenian polis played an active role in supporting market exchange; and in ways that are surprisingly modern.

Markets in Athens were not only an independent institutional feature, but were considered such an essential aspect of the operations of its political economy that the city-state enacted significant legislation to enhance market exchange operations. All the indications—the appointment of coin-checkers,[17] weights and measures standardisation,[18] the appointment of market-overseers,[19] the creation of special maritime commercial courts to expedite

14 Braudel 1985.
15 Finley 1985, 22.
16 Holladay 1997, 2201.
17 Engen 2005, 359–381.
18 Lewis 2008, 118–131. One of the most controversial documents in Greek epigraphy.
19 Fantasia 2012, 31–56, contains a detailed description and analysis of Athenian market overseers and their functions.

trade disputes,[20] and the complete absence of alternative resource allocation mechanisms—point to the fact that Athens did not attempt to control the market, it sought to facilitate it through regulation.

Core political ideas relating to, *inter alia,* democracy (δημοκρατία), freedom of speech (ἰσηγορία) and equality before the law (ἰσονομία) have become quintessential parts of modern Western political culture, yet Athenian economic ideas, especially relating to their innovative institutional approaches, are not considered relevant to the modern world. Many Western economies have been engulfed by the recent economic and financial crisis, creating unprecedented levels of public and private debt and leading to persistent calls for 'debt write-down' and 'debt-forgiveness'. It has been a case of institutional failure on virtually a global scale. In this context, it should be recalled that in the early 6th century, a similar crisis of societal indebtedness engulfed Athens. To resolve the economic crisis Solon instigated a series of fundamental reforms that set the city-state on a path which, by the end of that century, led to the birth of democracy.

In my use of institutional analysis, I have tried to demonstrate that the naval economy of Athens was the font of a unique economic efflorescence created by a process of Keynesian demand-led growth. It is one that invites further research to explore the neglected subject of the institutional responses of Athenians to the many economic challenges they faced. Ancient history itself is also likely to benefit from a more explicit incorporation of an economic perspective which would have a leavening effect on its pervasive political, military and cultural focus. The underexplored subject of the Athenian economy may well yield historical insights of relevance and value to some of the political and economic difficulties of our contemporary world. Indeed, the return of the ancient economy as an active and valid category for future research by ancient historians is also likely to provide a valuable corrective to the ahistorical nature of modern neoclassical economics, an act of omission for which the classical originators of the discipline could never stand accused.

20 Cohen 1973, 65–69.

Appendix: Sources

Though I am critical of Finley's dismissal of economics and his conclusions regarding the economic history of ancient Greece, it is a tribute to his prodigious erudition, analytical capacity, and perspicacious insightfulness that for almost two generations scholarship on the ancient economy has marched to a drumbeat first sounded by him during the 1960s. A number of aspects of his programmatic research agenda have influenced the approach I have taken: his rejection of the notion of a value-free history, his advocacy of the use of conceptual models, his emphasis on the economic significance of warfare, and his refusal to sanctify ancient literary sources as the embodiment of historical verisimilitude. On this last point, he expressed himself in his inimitably trenchant manner, criticising 'the widespread sentiment that anything written in Greek or Latin is somehow privileged, exempt from normal canons of evaluation.'[1]

For Finley, an ancient history that professed to be value-free or lacking in subjectivity was illusory. He argued that the very process of selecting events and placing them in a temporal order within a narrative sequence 'imply a value judgment (or judgments)' before concluding, 'The study and writing of history, in short, is a form of ideology'.[2] There is a further aspect of Finley's extensive research agenda that is of perennial importance to the writing of ancient history and which requires further elaboration: the use of ancient sources. Recognising the fragmentary and problematic nature of ancient sources, Finley was highly critical of the privileged position accorded the extant literary sources by ancient historians. As evidence for ancient history, the ancient literary sources needed to be approached cautiously because of their paucity, inherent elite bias and fragmentary nature—the latter a consequence of partial survival due to the vagaries of happenstance. These limitations were, according to Finley, 'the unalterable condition of the study of ancient history.'[3] This occupational hazard that Finley is alluding to, what we may call the 'positivist fallacy', is to treat the extant sources as an unproblematic reflection of the past, without due cognisance being given to their inherent limitations.[4] As a consequence, the writing of ancient history is often determined not so much by the victors as by the surviving sources, which, in the case of classical Athens, happen to be one and the same. The interpretation and evaluation of literary source evidence has traditionally consisted of philological techniques com-

1 Finley 1985c, 10.
2 Finley 1985c, 4. Finley's ideology is not the 'crude, politically motivated distortions' of Italian Fascism or Soviet historiography but a broader more 'neutral' one (based on the Shorter *OED*) that involves a way 'of thinking characteristic of a class or an individual.'
3 Finley 1977, 325.
4 Jongman 1988, 17.

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bined with literary criticism. Into this delineated domain of analytical techniques, the practice of quantification rarely intrudes. If our extant sources are considered questionable by the fact of their paucity and unreliability then, unsurprisingly, numbers derived from such sources are looked upon as particularly suspect by many ancient historians.

To interpret the sources, we require models of inference and evaluation for which scholars have devised a range of approaches including; source criticism, narratology, oral tradition analysis, philological and rhetorical criticism. That our literary sources require interpretive techniques and models becomes apparent when we consider that our principal ones used in this study—Herodotus, Thucydides, Diodorous and Xenophon—wrote for an audience in a Hellenic world at the centre of which lay Athens: we can only speculate how different these narratives would have been if that world was a Spartan-centric one. Finley's warning with respect to the oral foundations of our main sources is also apposite: 'oral tradition … did not merely transmit the past, it created it … in a shape which sometimes looks like history, and has been widely accepted as history both by the Greeks and (with qualifications) by many modern students'.[5]

Most modern scholarship considers that Herodotus, as the founder of the western genre of history writing, is deserving of the Ciceronian sobriquet, the 'Father of History' (*On the Laws*. 1.5).[6] Such a high opinion was not shared by Herodotus' immediate successor, Thucydides, who referred to him, anonymously, as a 'logographer'—a teller of stories—'without applying any critical test whatever' (Thuc. 1.20). The opening lines of Plutarch's essay 'On the Malice of Herodotus' (*Moralia* 854) indicates his low opinion of Herodotus' historiography: 'To enumerate all his lies and fictions would need a library.'[7] Ste. Croix is reported to have suggested, humorously, that he would accept Cicero's ascription of Herodotus as the 'Father of History' (*On the Laws*. 1.5) if it was agreed that history writing was born in the next generation, with the arrival of Thucydides.[8] Over the decades scholarship has been divided on Herodotus' credentials as a historian. However, he always seems to have attracted a coterie of ardent supporters, amongst the most avid of whom was R.G. Collingwood; 'one of the great innovating geniuses of the fifth century.'[9] Collingwood, the philosopher of history, was also unequivocal that Herodotus as the inventor of history writing had transformed 'legend-writing into

5 Finley 1975, 25.
6 Luce 1997, 26.
7 Russell et al. 1972, 534.
8 Cartledge 2009, 373. This article also contains a summary of some of the most important scholarship on Herodotus presented in broad chronological order.
9 Collingwood 1994 (1946), 28.

the science of history.'[10] He laid the foundations upon which Thucydides later integrated important methodological precepts by insisting that 'historical inquiry rests on evidence'.[11]

On the debit side, one of Herodotus' most trenchant critics was the German scholar, D. Fehling who claimed to have proven that many of Herodotus' 'source-citations are fictitious.'[12] It was Fehling and a number of like-minded scholars who became the target of an intensely polemical attack by the venerable American classicist, W.K. Pritchett, in a provocatively-titled monograph, *The Liar School of Herodotus*.[13] Pritchett was scathing regarding Fehling's conclusions that Herodotus may never have left Greece, using archaeology to disprove the assertion, and similarly for his assumption that all 'folktales, sagas or myths … are but fabrications by the writer in whose work the tale first appears'.[14] Following a positive narratological critique by the French structuralist, Francois Hartog,[15] Herodotus was adopted by the emerging New Historicist school which contested the 'Father of Lies' appellation, arguing that, if there were lies, they were apposite ones and culturally revealing for all that.[16] This scholarly polemic apart, it should not be forgotten that Herodotus clearly spelled out his programmatic agenda for the evaluation of evidence based on its intrinsic reliability. He insisted on distinguishing what he had been told and what he could verify (Hdt. 2.99.1), between actual witnesses and hearsay evidence (Hdt. 4.16.1), while at times stressing that he was not prepared to believe everything he had heard (Hdt. 3.122.1).[17] The current scholarly assessment of Herodotus is probably best summed up by Cartledge who, having weighed the various arguments and evidence and allowed for the usual issues relating to bias, omissions and literary artistry, concludes that he has 'adopted the working assumption of Herodotus' essential veracity'.[18]

Possibly influenced by our Christian cultural background, where ancient religious texts are treated as revealed documents and therefore beyond scrutiny, K.J. Dover, believes there is a tendency for some ancient history scholars to treat ancient historians such as Thucydides, not as a source so much as an authority. In particular, he decries a

10 Collingwood 1994 (1946), 19.
11 Collingwood 1994 (1946), 19–20.
12 Fehling 1989, 87.
13 Pritchett 1993.
14 Pritchett 1993, 24–25.
15 Hartog, trans. Janet Lloyd, 1988.
16 Cartledge 2009, 375.
17 It compares less favourably with Thucydides' more detailed and comprehensive articulation of his methodological approach which has affinities with modern standards of historiography which possibly accounts for his contemporary reputation as 'the historians' historian'.
18 Cartledge 2009, 379.

contemporary reluctance to subject Thucydides to critical analysis but instead employs inventive arguments to explain away omissions, distortions and other aspects of his methodology which are 'alien to modern historical practice.'[19] But not all scholars are as inclined to forgive Thucydides what they consider to be his more egregious inconsistencies. Thucydides' authorial comments that Sparta was favoured among the Greeks and that the Athenians came to be reviled, not just by their allies, but by the Greeks in general (Thuc. 2.8.4–5; 8.2.2),[20] is contested by A.H.M. Jones, who suggests that this was a misconception stemming from Thucydides' oligarchic sources.[21] More generally, while both speech and narrative are two integral elements of Thucydides' technique, they pose a challenge for the reader in that they can alternate between competing with and confirming the authorial view.[22] However, in helping to distinguish between rhetoric and reality, context is an important device used by Thucydides in alerting the reader to the differentially assigned significance of what is being said.

The essential difference between our two principal ancient historians lay in Herodotus' method of setting out information for the reader to interpret, while Thucydides used the information to develop universal laws of human psychology.[23] In common with their modern successors, both ancient historians shared an abiding preoccupation with the concept of causation. For Herodotus, human plans were ephemeral and the will of the gods always triumphed in the end. It was diametrically the opposite for Thucydides who saw no role for the gods and sought human explanations for human events, admitting only one extraneous variable, chance (τύχη).[24]

By definition, the structuring of narrative involves selection and interpretation, a fact explicitly recognised by Diodorus: 'in life many different actions are accomplished at the same time, but those who record them have to interrupt the narrative and to parcel out different times to simultaneous events. This is contrary to nature: the result is that while reality conveys the experience of events, the written record, deprived of such power, imitates events, but falls far short of the true arrangement.' (Diod. 20.43.7). For purposes of narrative coherence, Thucydides employs chronological displacement on occasions to make his narrative more intelligible for the reader, or to emphasise particular events.[25] Such temporal deviations and chronological displacements are made

19 Dover 1983, 57.

20 'So general was the indignation felt against Athens, whether by those who wished to escape from her Empire, or were apprehensive of being absorbed by it.' (Thuc. 2.8.4–5). 'But above all, the subjects of the Athenians showed a readiness to revolt even beyond their ability' (Thuc. 8.2.2).

21 Jones 1957, 67.

22 Morrison 1999, 95.

23 Priestley et al. 2016, 165.

24 Rhodes 2006, 28.

25 Hornblower 1994, 166.

necessary 'by the cussedness of reality' and are a 'precondition of historical understanding.'[26] Of importance in this respect is Thucydides' articulation of how he deals with issues of temporality in his narrative, claiming that 'events have been described in chronological order, as each occurred, in the narrative arrangement by summers and winters' (Thuc. 2.1). As 5th century Greek warfare was still largely a seasonal activity, Thucydides' chronological arrangement of his narrative by summers and winters 'is a clear programmatic assertion of the military character of the work.'[27] Furthermore, as Hornblower points out, this seasonal arrangement was a novel aspect of Thucydides' narrative account and, as such, 'betrays his own military training and experience.'[28]

Diodorus overlaps with Thucydides, a coincidence from which Diodorus' accuracy with respect to dates, amongst other things, does not emerge with its credibility fully intact. Diodorus says he spent thirty years researching and writing his *Bibliotheca* (Diod. 1.4.10) a claim, one of many, disputed by modern scholars.[29] However, from 411 onwards when Thucydides account ends abruptly, Diodorus becomes much more important as a source with Books 11 to 17 being of prime interest for our purposes. On the positive side, without Diodorus we would know less about the Pentekontaetia about which, by comparison, Thucydides is far less forthcoming. As with the antecedent historians such as Herodotus, Thucydides, Xenophon and Ephorus to whom he refers, Diodorus sets out his methodology in which he stresses selectivity (Diod 4.5.2), proportion (Diod. 4.5.4), autopsy (3.11.3) and close attention to detail (Diod. 4.46.5).[30] While accepting that Ephorus was Diodorus' primary source, Green vigorously contests the long-standing assumption that much of the *Bibliotheca* was little more than a transcription of Ephorus.[31]

As non-literary sources, inscriptions constitute an important part of our evidential repertoire. Literary sources were written at particular times for particular audiences, and as we have seen, require careful assessment and evaluation as they speak to us indirectly. By contrast, inscriptions, such as the most important suite of inscriptions for our purposes, the so-called Naval Records, speak to us directly. But as with other written sources only a small sample of what was inscribed on stele has survived and we have no way of assessing how representative the surviving remnants are. Though the fragmentary nature, partial survival and often dilapidated state of what archaeologists have discovered present enormous difficulties of interpretation, the Athenian

26 Rood 2004, 110–111.
27 Hornblower 1991, 235.
28 Hornblower 1991, 235.
29 Hornblower 1981, 25. Hornblower says that 'there is no evidence for first-hand knowledge of any country except Egypt.'
30 Green 2006, 25.
31 Green 2006, 35–36.

naval inscriptions provide invaluable insights into important aspects of the burgeoning naval economy of classical Athens. As unique records of the inventories of the Athenian shipyards and dockyards, these epigraphical documents, in combination with literary sources, can together provide a more complete picture. However, it must also be noted that, with few exceptions, the Naval Records are restricted to the period 377–323.

The cliometric revolution of the 1970s, the application of economic theory, econometric techniques and statistical analysis to the study of economic history, had transformative effects on the study of 19th and 20th century history. The non-existence of statistical datasets, combined with the interminable scholarly debate as to the very existence of an economy in the ancient world have contrived, in the main, to preclude the application of economic analysis to the ancient economy *a priori*. A *sine qua non* of cliometric analysis is the availability of quantified information, the fragmentary nature, opacity and paucity of our principal literary sources within which our ancient numbers reside presents a considerable challenge to this type of analysis. In the light of the particular demands of economic history, we need to assess briefly the suitability of our sources for such an enterprise. In doing so we must accept, from the outset, the validity of A.H.M. Jones' observation of 'the ignominious truth, that there are no ancient statistics.'[32] So, statistics are out. However, there are numbers in abundance in our sources and just as philologists seek information beyond the ancient words, it would be remiss of economic historians to fail to do likewise with ancient numbers. This view that numerical analysis coheres with ancient history is expressed by one of the leading authorities in the field, Catherine Rubincam: 'The use of numbers and quantification is an important aspect of historiography, both ancient and modern.'[33]

One of Fehling's principal criticisms is Herodotus' use of numbers. In particular, he considers multiples of primary numbers and numerical formulae in Herodotus to be little more than invention, concluding that numbers in Herodotus 'do not come from any sources but are made up by Herodotus himself.'[34] In a review of this work Lateiner draws the ominous conclusion: 'His economical thesis deserves refutation, if we believe any history of 550–475 B.C.E. is possible.'[35] In an assessment of Fehling's arguments, Rubincam has created an impressive database of the numbers in some ancient sources, including the numbers of troops and casualty figures given by Thucydides. Based on this analysis, she has arrived at the interesting conclusion that the use of 'typical' numbers by Herodotus is the same as Thucydides: a long way from the egregious misuse of numbers suggested by Fehling's thesis.[36] Based on Rubincam's statistical work, 'The

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32 Jones 1948, 1.
33 Rubincam 2012, 121–122.
34 Fehling 1989, 216–238.
35 Lateiner 1990, 76.
36 Rubincam 2003, 459.

answer that emerges from this analysis is somewhat surprising: not only is Herodotus' preference for "typical" numbers lower than that of all but one of the poetic works; it is also lower than Xenophon's and equal to that of Thucydides!'[37]

While it would be anachronistic to apply modern expectations of statistical accuracy and practice to ancient authors, there are several issues surrounding any individual number in our sources which may vitiate its validity for present purposes. There are key unknowns related to the actual numbers used by our ancient historians which can undermine our confidence in their accuracy. How reliable and precise was the original information, especially numbers, given to the historians which in many instances was several generations removed from the time of writing? When Thucydides says, for instance, that there were '250 vessels employed on active service in a single summer' (Thuc. 3.17), the common understanding among modern scholars is that these numbers were reported to him by his sources and represented the prevailing tradition with respect to these events. For a variety of reasons, these numbers are highly unlikely to reflect the actual number of ships in every single instance. As we can see, a significant proportion of the numbers quoted in our sources are decimal multiples and, as such, are suspiciously round. We know of no Athenian regulation which prescribe such multiples, nor is there any obvious military, strategic, tactical or logistical reason for such a formulation.

The next issue that arises is whether the numbers quoted are over or under estimates and in either case, what is the extent of the over or under shoot? The short answer is that we will never know but, more pertinently, is it reasonable to suppose that the uncertainties that attach to the numbers are likely to cancel each other out across a large range covering a very long period? In this context, if we view the trireme fleet numbers used in Table 2, for example, as a collective derived from a range of sources both literary and epigraphical and spread over a century and a half, any over or under reporting bias is likely to be mitigated across the series. This is also likely to be true for the absolute size of the numbers used as, for the most part, our historians' sources were likely to have been Athenians, or at least Greeks living in Athens, who would have been very familiar with the naval logistics surrounding trireme expeditions as either participants or contemporary observers of such operations. As a further check on the risk of the numbers being grossly out of kilter with the reality, it must also be considered that historians such as Herodotus, Thucydides and Xenophon were presenting their histories to a public broadly familiar with the events, and so persistent numerical exaggeration may have undermined the historian's own credibility. In the case of Thucydides, our source author was himself an experienced admiral in the navy about which he was writing, a fact which should give us some added confidence in his numerical practices

37 Rubincam 2003, 462.

with respect to the size of expeditions. This is in addition to a more general observation highlighted by Rubincam: 'the carefully nuanced policy Thucydides adopted, in passing on the information from sources of varying quality, as he carved out for himself a historiographic position in reaction to other contemporary practitioners of this new genre of literature.'[38] None of these arguments, of course, will put all uncertainties regarding the numerical information in our sources 'beyond reasonable doubt', the best we can hope for, in the case of ship numbers in particular, is that across the spectrum of a compiled dataset that their accuracy can be accepted on the basis of a 'balance of probabilities'. As issues surrounding ship numbers and the operational costs of the naval economy are central to an economic history discussion such as this, the use of these numbers as an appropriate tool of ancient historiography is the subject of a more detailed treatment in the 'Size Matters' section of chapter 11.

38 Rubincam 2012, 109.

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